

# MODEL AIRPLANE NEWS

SEPTEMBER 1944 • 20 CENTS



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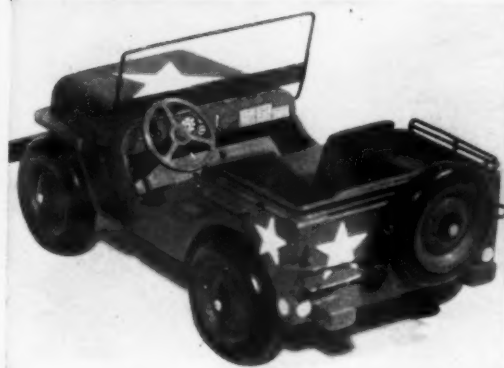
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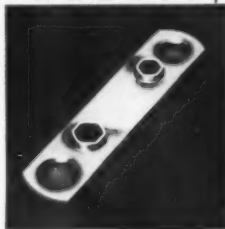


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# MODEL AIRPLANE NEWS

SEPTEMBER, 1944

VOL. XXXI, No. 3

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PUBLICATION

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NEWS of the second Boeing B-29 Superfortress raid on Japan leaves little doubt that first stages of aerial assault on that enemy's homeland has begun. This raid struck in the same vital industrial region as the first, indicating graphically that a very specific target region is being spotlighted. In addition to Yawata and Omura, the Supers smashed at Sasebo, Japan's third largest naval base, saving their heaviest loads for this important objective. Intelligence reports several vessels, damaged in the Marianas campaign, were undergoing

Chennault's 14th Air Force fighters and "light" bombers and their loss would be tragic. The Chinese have lifted the siege at Hengyang temporarily but the Japs are delaying while reserves are brought up for the final drive down the Canton-Hankow railroad, loss of which would divide China in half. It is imperative that this Japanese drive be broken and American planes and pilots are pounding the enemy constantly for this purpose.

COMPLETION OF the Saipan conquest gives the United States its most strategic base yet captured in the Pacific.



First flight photo of Consolidated Vultee Model 39 passenger transport



Russian Yak 9 fighters convoy AAF shuttle bombers from Germany to Russia

repairs at Sasebo and were again hit. Repeated attacks on vital steel mills and naval repair yards in this region will obviously damage the enemy's war machine from both ends: the production of raw materials and the destruction of completed articles:

THE GRAVITY of the situation in China on the Seventh Anniversary of the Marco Polo bridge "incident" is emphasized in an analysis of its Airpower aspects. Bases within the Eastern China segment, which the Japs are attempting to cut off, may or may not be those used by Superfortresses for their attacks on Kyushu, but they are used by General

Lying only 1465 miles from Tokyo and possessing two excellent airfields, which need only repairs and enlargement, Saipan will provide Superfortresses with a base well within easy range for their bomb loads. In addition, Saipan's fine harbor provides facilities for the unloading of supplies of fuel, oil, ammunition, spare parts, etc., essential to the operation of a bomber group. This harbor will also provide a convenient base for American submarines located in the Japanese home waters. With subs severely damaging ship supply lines and Supers destroying production at home, Japan can be dealt with effectively.

(Turn to page 30)





## "You'll Go Places On This Team!"

1st Lt. Richard J. Niederriter, pilot, 1st Lt. Richard A. Carocari, navigator, Sgt. Richard W. Evans, tail-gunner, and 1st Lt. Lester A. Darst, bombardier, (left to right in foreground above) have hit most of Germany's "hot spots" in their Flying Fortress, the "Winsome Winn." Asked which was their most exciting mission, their answer was unanimous: "Anklam!"

"You probably never heard of Anklam," Lt. Carocari said. "Before the war it was just a little jerk-water town a hundred miles or so from Berlin. But the Nazis built a Focke-Wulf assembly plant there. And our assignment was to flatten it."

"I plotted my course for Berlin, to make Jerry think that was where we were heading. And we hadn't any more than crossed Denmark until the reception committee buzzed out to meet us. At least 300 German fighters hit our flight. They'd come barreling in from all directions at once... the fire from their cannons and machine guns making a solid sheet of flame along their wings. The going was hot and heavy for awhile."

"Hot and heavy is right," Lt. Niederriter said. "We were under fire for 3½ hours. But our gunners were too smart—and too good—for them. Evans here had his tail-gun knocked out, so he came up and fired the flexible gun in the nose. When the ball-turret got fouled up with oil from a damaged line, the ball-gunner adjusted it so it would keep revolving—to fool the fighters—and then he climbed out and lent a hand at the waist-guns. It was the prettiest piece of teamwork I've ever seen."

"That's what really licked 'em," Sgt. Evans said. "Teamwork! Lt. Niederriter had his

hands full keeping the Winsome Winn on her course... yet all the time, he sat up there and called the shots for us gunners. We sure did work those German fighters over. We saw two blow up in mid-air."

"Finally," Lt. Darst said, "we changed our course and cut for Anklam. The F-W's gave us a breathing spell as we swung in over the town and we made a nice, smooth bombing run. I saw our eggs land square on that factory. And, brother, did we plaster it! They won't make fighter planes there very soon again!"

Lt. Niederriter grinned. "Sure," he said, "you got plenty of places in the AAF. And it's not exactly joy-riding, either. But we've got a job to do. And we work together to do it."

"And I think that's the important thing for any young fellow—who wants to win his wings as Gunner, Bombardier, Navigator, or Pilot—to remember."

"You're on a team in the AAF—from the time you step into your first training plane until you get up there in action. And it's a winning team... an unbeatable team... the 'greatest team in the world!'"



"They came barreling in from all directions."

### MEN OF 17...



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tudes are outstandingly high, you will be trained as a bombardier, navigator or pilot, and upon successful completion of training, will be graduated as a Flight Officer or Second Lieutenant.

For pre-aviation training, see your local Civil Air Patrol officers. Also see your High School principal or adviser about recommended courses in the Air Service Division of the High School Victory Corps. Ask about the opportunities for college training through the Army Specialized Training Reserve Program.

For information on Naval Aviation Training, apply at nearest Office of Naval Officer Procurement. This advertisement has the approval of the Joint Army Navy Personnel Board.

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GREATEST TEAM IN THE WORLD

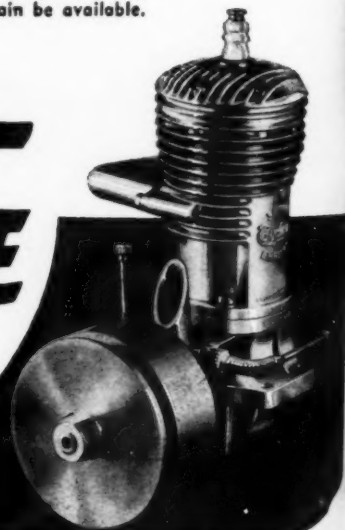
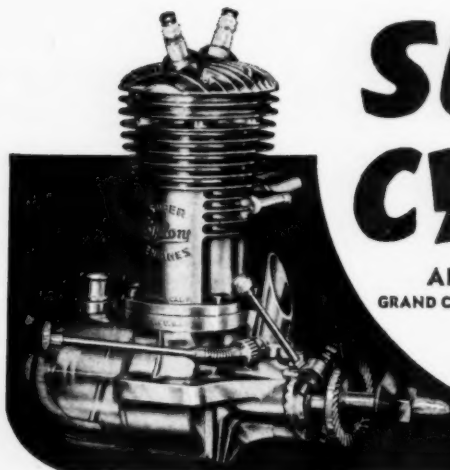
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## TO YOUNG MEN OF 17

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*Superfortress!*

**Plane on the Cover**

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### Statement of General George C. Marshall, Chief of Staff

"The attack on Japan by the Superfortress B-29 from distant bases introduces a new type of offensive against our enemy. It also creates a new problem in the application of military force. Because of the enormous range and heavy bomb load of these Superfortresses, far exceeding that of previous strategic bombers, they can strike from many and remote bases at a single objective. The power of these new bombers is so great that the Joint Chiefs of Staff felt that it would be uneconomical to confine the Superfortress organization to a single theater. These bombers therefore will remain under the centralized control of the Joint Chiefs of Staff with a single commander, General Arnold, acting as their agent in directing their bombing operations throughout the world. The planes will be treated as major task forces in the same manner as naval task forces are directed against specific objectives."

"This type of flexible, centralized control recognizes that very long-range bombardment is not a weapon for the Air Forces alone. Under the Joint Chiefs of Staff theater commanders will have a voice in its employment, ensuring that maximum effectiveness will be obtained through missions which will contribute directly to the overall strategy for the defeat of the enemies."

### Statement of General H. H. Arnold, Commanding General, Army Air Forces

"The use of the B-29 Superfortress in combat brings actuality to an Air Forces plan made years in advance for truly global aerial warfare. It proves that our planners and engineers, coupled with the capacity of American industry, are an unbeatable combination. The result is here, a highly complicated and most deadly airplane, capable of delivering the heaviest blows yet known through air power."

"I assume the heavy responsibility for its employment under the Joint Chiefs of Staff with full confidence in its potential use."

"This employment of the B-29 makes possible the softening up attack on Japan very much earlier than would be possible with aircraft hitherto known to combat. This mighty weapon advances the bomber line a long way."

"The employment of the B-29 is just beginning. It goes directly into battle from the production lines, and we have a lot to learn before its full power may be developed. Consequently, the frequency of its use will be carefully determined for some time. From this circumstance, let our enemies take what comfort they can while they can."

## BOEING B-29 BOMBER

### 20th AIR FORCE

**New group makes global  
Air Power a reality**

THE existence of a new aerial organization, the Twentieth Air Force, with jurisdiction over all activities of the Superfortress, was announced recently by the War Department, following announcement of the combat use of the B-29 in the China-Burma-India Theater of Operations.

General H. H. Arnold, U. S. Army, Commanding General of the Army Air Forces, is also Commanding General of the Twentieth Air Force which will operate directly under control of the Joint Chiefs of Staff, with headquarters in Washington, D. C. Brigadier General Haywood S. Hansell, Jr., U. S. Army, is the new organization's chief of staff.

The Twentieth Air Force was created by the Joint Chiefs of Staff as the application of a new refinement of global warfare. The great range of the Superfortress

(Turn to page 34)

**The amazing story behind this  
super-bomber is a tale of splendid engineering achievement**

NO MORE dramatic entrance into World War II combat could have been occasioned by a weapon of war, than the headlines which screamed: "Superfortresses Bomb Japan!" For years a hushed secret, so confidential has the B-29 program been kept that even though large numbers of them have been built, flown across the nation, stationed at fields throughout the length and breadth of the continent and in flight daily over the largest centers of population, no more than a handful of "outsiders" knew anything more than its name! Repeated references to the mysterious "B-29" were made in the press for many months, both here and abroad yet no one knew more than that symbolic group of letters and numbers.

The first question was always: "How big is it?" and there was no lack of answers to that question, ranging from "about the size of a Fortress" to "it makes the Douglas B-19 look like a pursuit plane!" Then came the inevitable: "What does it look like?" and here the self-styled experts were stumped. The secrecy

of the B-29 is a real tribute to the integrity of Army officers and enlisted men, Boeing engineers and workmen and the many sub-contractors and small parts manufacturers who played a vital role in its development.

A little more than a month prior to its dramatic debut, a small group of Aviation Writers Association members were flown to Wichita, Kansas and the B-29 was unveiled. A thorough inspection was followed by lengthy flights and the writers came to know the B-29 intimately, but not until the monsters smacked Japan could their stories be told.

The Boeing B-29 Superfortress is one of the most amazing airplanes produced. It is one of the largest and fastest planes ever built. A giant load carrier, its streamlining gives it a drag no more than a small airliner of a few years ago. Packed full of every conceivable invention and device that American scientists and engineers could contrive to give Air Power a full meaning, and yet it is comfortable and smooth riding. It carries a

(Turn to page 38)



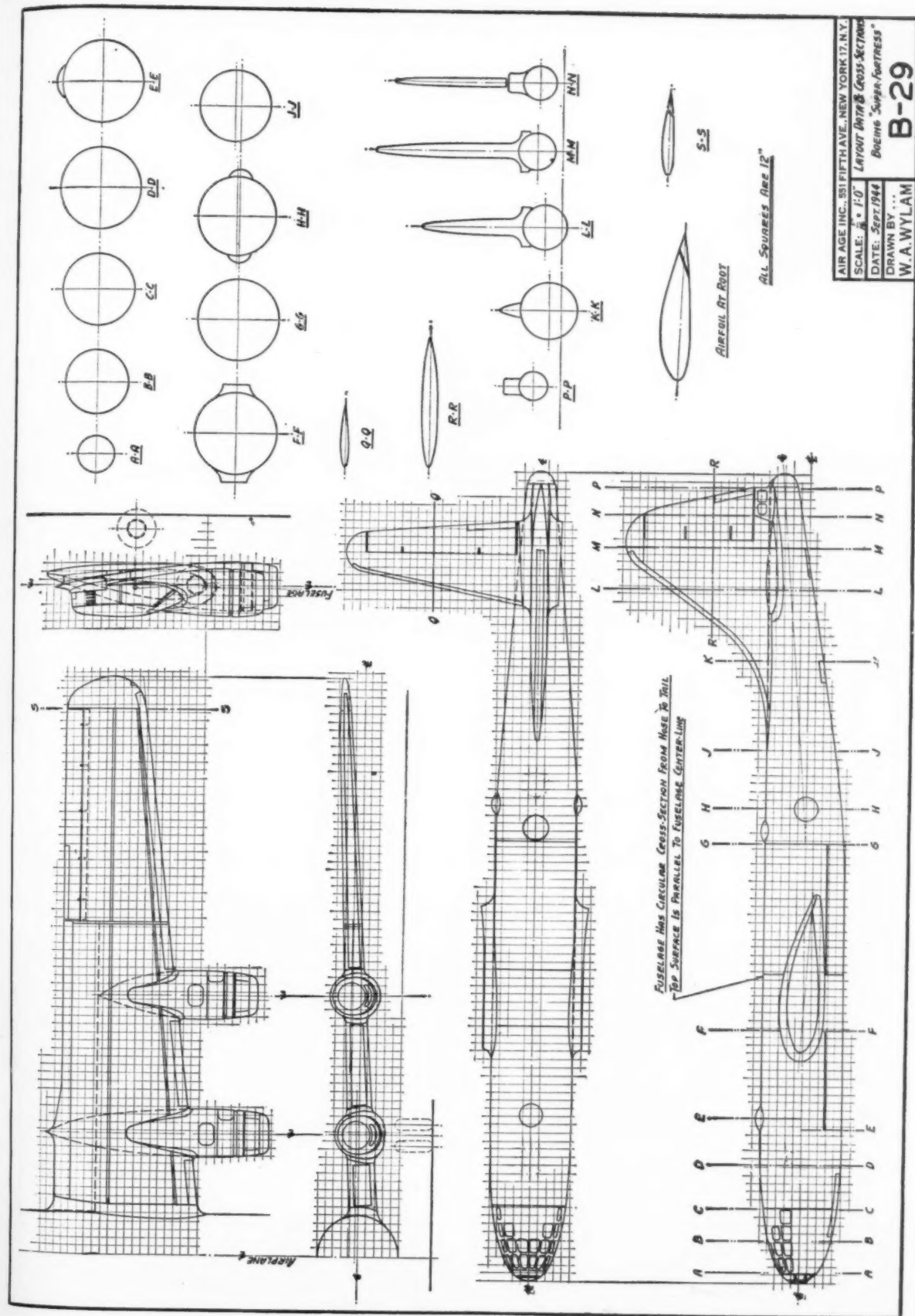
Official insignia of new 20th Air Force

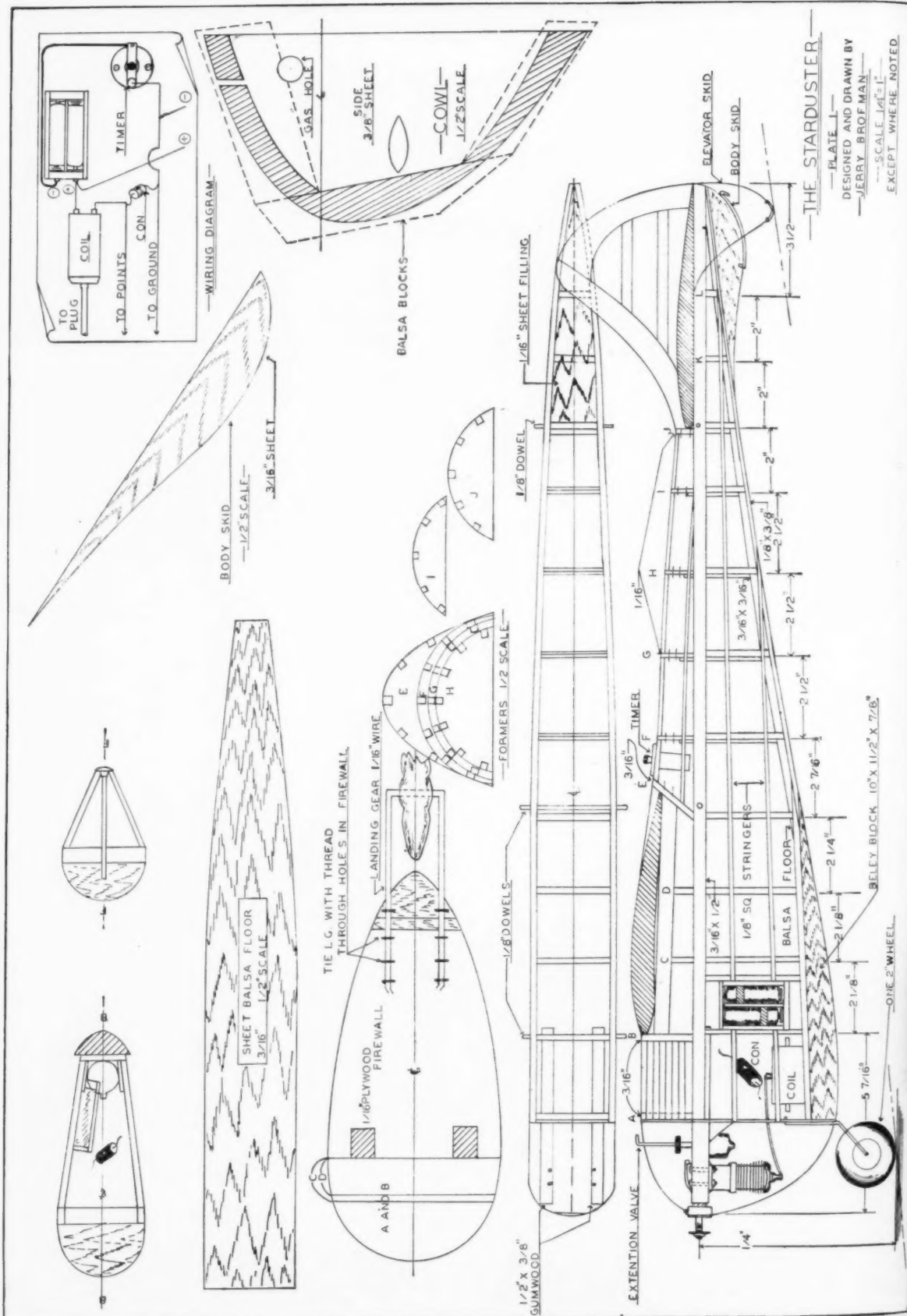
Model Airplane News - September, 1944



First Boeing XB-29 had three-blade propellers, later crashed on test flight







—PLATE I—

DESIGNED AND DRAWN BY

JERRY PROFMAN

—SCALE 1/4"=1"

EXCEPT WHERE NOTED

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by JERRY BROFMAN

# SOLARFLY THE STARDUSTER



THE *Starduster* is a modified scaled down version of the *Sunduster* (MODEL AIRPLANE NEWS, August, 1942 issue). It combines the same basic arrangement of its "big brother" having the same excellent climbing and soaring qualities of the *Sunduster*.

The *Starduster* is designed to incorporate the following features:

1—A long nose moment to help it hold its course.

2—A thin air foil, to give it speed on the climb and less drag.

3—A completely cowled and inverted motor in a streamlined, light efficient fuselage to reduce the drag and give it a fast climb.

4—Large elevator surfaces to prevent stalling and induce stability.

5—Light, strong and easy to build structure.

This model is very adaptable to precision flying because of the long nose moment which will help to give a smooth, straight climb, even under very low power, combined with a smooth, slow glide.

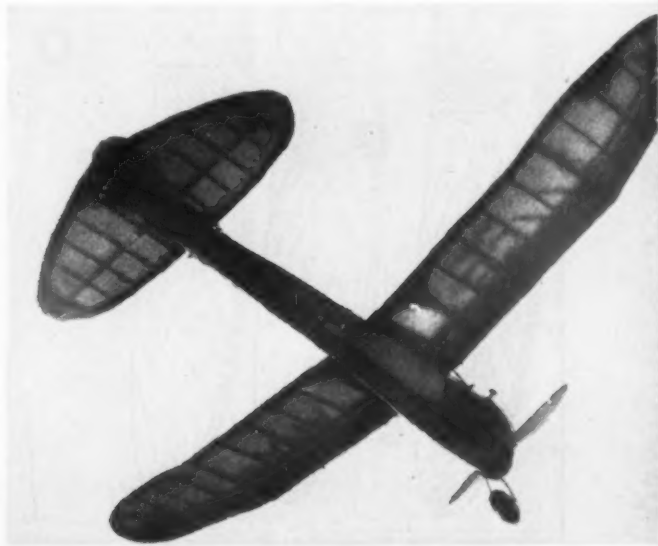
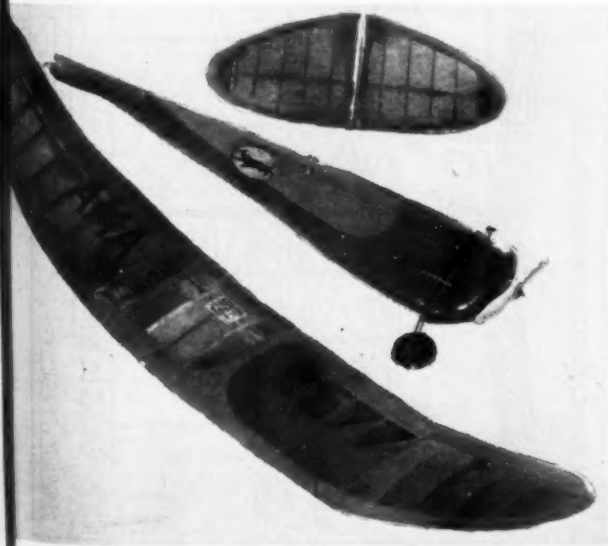
Because of the war and new wartime rules, long thermal flights were not attempted. During tests, the *Starduster* showed real contest possibilities. It displayed an extremely fast climb and excellent pull out without any loss of precious altitude. The glide, as was to be

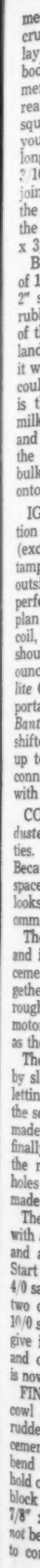
expected, was slow, long and flat. On a ten second motor run, the *Starduster* consistently bettered a two and a half minute average.

**FUSELAGE**—First, scale the plans to working size. This can be done on any large piece of drawing or wrapping paper.

To build the fuselage, construct the crutch out of 3/16" x 1/2" hard, firm balsa. Then cut out the top formers and glue in place onto the crutch. Cut out the firewall from 1/16" or 1/8" plywood and cement onto the crutch at the first 3/16" balsa former. Next cut out the 3/16" sheet balsa floor and glue on the firewall as indicated on the plans. Ce-

(Turn to page 13)





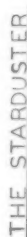
Bend the landing gear from a length of 1/16" steel wire. Remember to put on 2" sponge rubber wheel first. A sponge rubber wheel is recommended, because of the way the wheel is mounted on the landing gear, as it cannot be removed. If it were an airwheel and got punctured, it could not be changed. The landing gear is then tied to the firewall—first with milk bottle wire, then with heavy thread, and cemented a few times. Now, cement the 1/8" square stringers to the rear bulkheads and cement the wing platform onto the body.

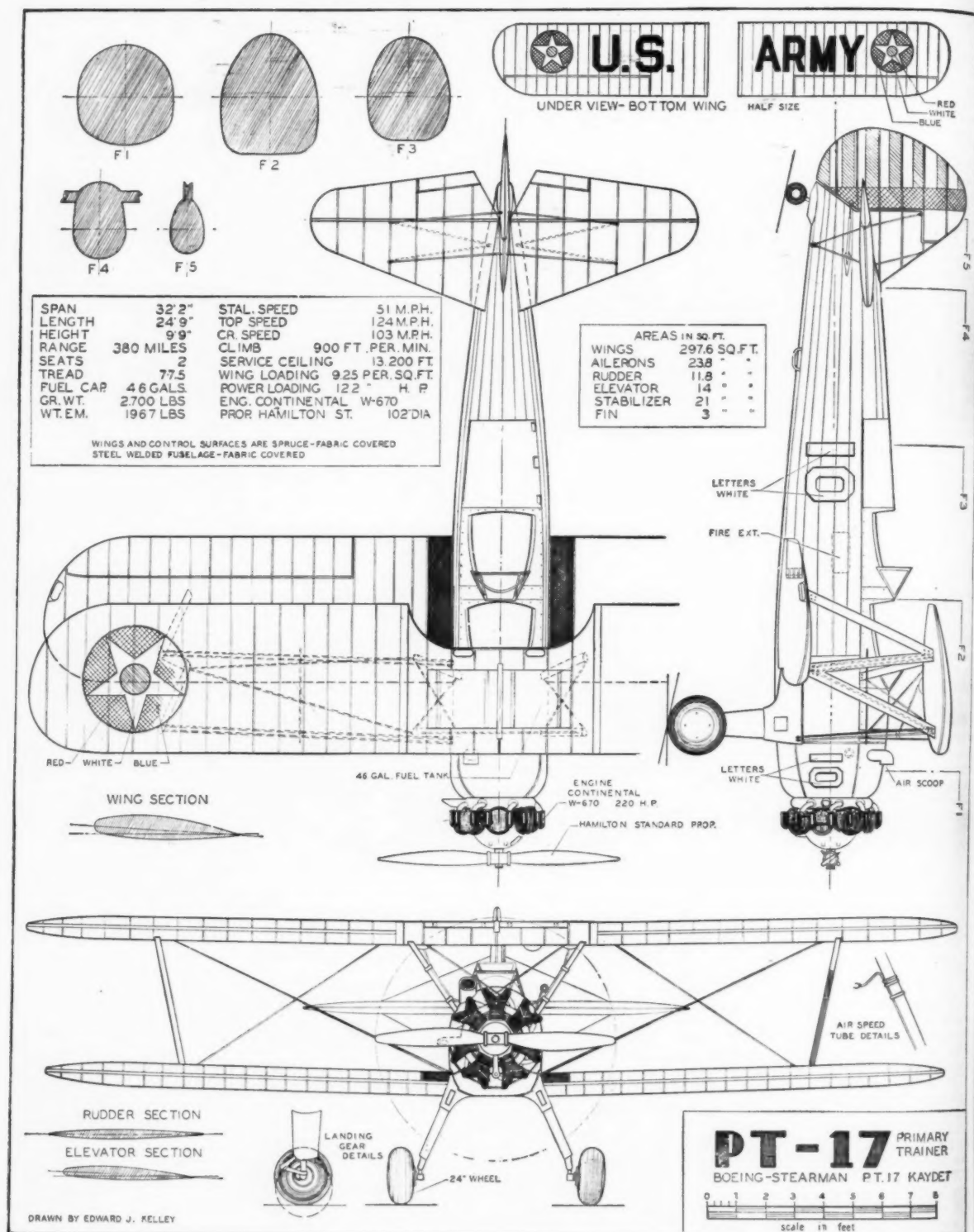
**COWLING**—The cowling of the *Sunduster* was essential to its flying qualities. In the *Starduster* this is not so. Because of the small motor and working space, the cowling is made mostly for looks and precision flying. It is not recommended for everyday sport flying.

The internal cowl shape is determined by slipping the block over the nose and letting the motor make an impression on the soft wood. Cuts and sandings may be made to allow better fit until the block finally rests flush against the firewall and the motor is completely enclosed. The holes for exhaust and gas can then be made.

**FINISHING FUSELAGE**—After the cowl and ignition are finished, the sub-rudder is formed of 3/16" hard balsa and cemented in place. Using 1/16" steel wire, bend a hook to fit on the sub-rudder to hold on the elevator. The bottom fuselage block is carved from a piece of 1 1/2" x 7/8" x 10" medium balsa and it should not be hollowed out. It should be rounded to conform with the firewall and plan

Model Airplane News - September, 1944





**T**HE Boeing PT-17 *Kaydet* Primary Trainer of the Army, and its Navy counterpart, the Boeing N2S-3, has "taught" more air cadets to fly than any other Primary Trainer. It is known as the "Jenny" of World War II. Recently

Boeing-Wichita's Vice-President and General Manager J. E. Schaefer delivered the 7,000th Primary Trainer to Brig. Gen. Ray G. Harris. The Boeing Primary Trainer is a two-place open-cockpit biplane of welded steel tube fuselage frame construction, with built up, fabric-covered

wooden wings. Its landing gear is of full cantilever construction, nothing moves but the wheels and the shock absorber. Three types of engines are used, the Lycoming 220 H.P., the Continental 220 H.P., and the Jacobs 225 H.P.



# DESIGNED FOR SPEED!

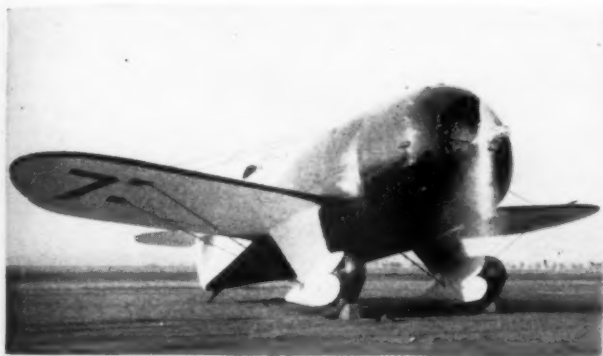
A selection of racing planes from the Air Age Technical Library



The most consistently successful racing planes in the high horsepower class were the Seversky series. Here is No. 13, the famous racer flown by Jacqueline Cochran to victory in the 1938 *Bendix Trophy Race*, Burbank (California) to Cleveland (Ohio) at an average speed of 249.774 miles per hour.



The name Roscoe Turner has become synonymous with air racing. Here is his world-famed Wedell-Williams "57" racer in which he raced to fame in 1932, '33 and '34, climaxing his efforts in 1934 by winning first place in the *Thompson Trophy Race* with an average speed of 248.13 miles per hour.



The Granville brothers of Springfield, Mass., designed possibly the most famous of racing planes, the Gee Bee series. Here is No. 7 flown by Lee Gehlback at 222.10 miles per hour in the 1932 *Thompson Trophy Race*. Cecil A. Allen was assigned to No. 7 in the 1935 *Bendix Trophy Race*, losing his life.



One of the most unique racing planes ever built was this special Hall monoplane built for wealthy sportsman and aviation enthusiast Russell Thaw. The plane appeared at the 1932 *National Air Races* but various difficulties kept it on the ground and it did not compete.



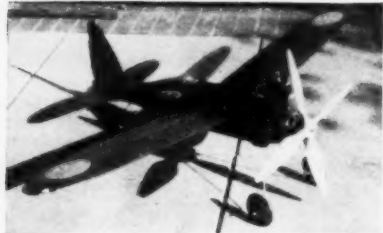
Clayton Folkerts designed a number of closed course racing jobs noted for their beauty and speed. Here is No. 15 flown by Lee Williams in the *Greve Trophy Race* at the 1939 *National Air Races*, last to be held. This plane qualified for the race at a speed of 260 miles per hour. Menasco engine of 400 hp.



Benny Howard is as much a part of air racing as hot dogs and soda pop. Here's his last racer, the renowned *Mr. Mulligan* that captured the 1935 *Bendix Trophy Race*, covering 2,050 miles at an average of 238.70 miles per hour. Mr. and Mrs. Howard were injured in the 1936 *Bendix* and ceased competition.



No. 1 W. A. Gibson's fine Vought Corsair

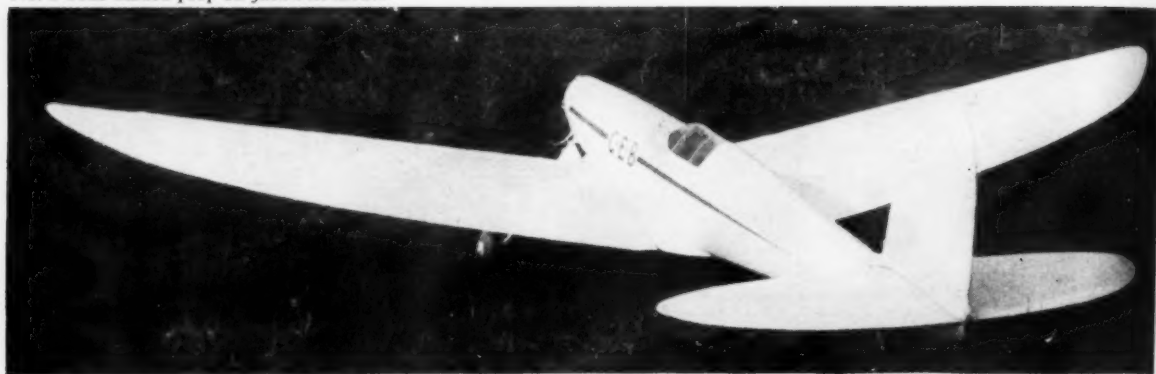
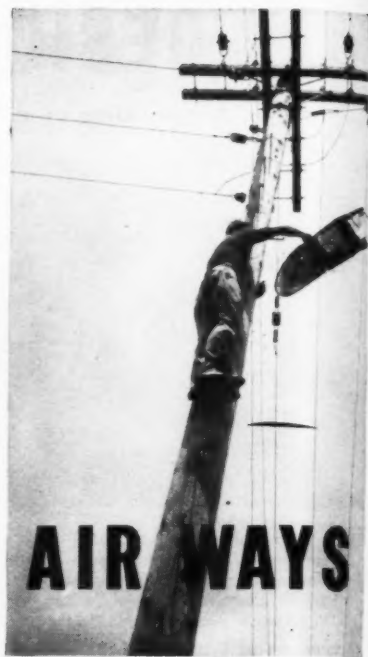


No. 2 Four bladed prop on Jack Pitt model

## News of model plane experimenters from all parts of the world

THE other day we had the pleasure of meeting Mr. H. O. Wise of 2802 Rodman St., Louisville, Kentucky, who is an indefatigable worker in the Louisville Model Aero Club. When we asked our habitual question concerning his opinion of this column he said something that set us to thinking. "Why don't you like flying models?" he asked and we insisted that we had been a flying model fan for years, most particularly since the advent of gas models. "Then why don't you print more flying model pictures in *Air Ways*?" he asked. "You seem to print only solids."

So the thought has occurred to us that perhaps other readers are asking that same question, which brings us to a point: Why is it that a solid scale modeler, after working hard on his model for many, many months will frequently work just as hard on the photograph of it? On the other hand, the gas modeler habitually scorns care in the photography of his model and normally feels that "any old snapshot" will do?



No. 3 Colonel Bowden's semi-scale low-wing job. British builders still use the type and find them stable and efficient



No. 4 N. A. Schaer built this Curtiss P-40 Flying Tiger U-control job. Note design and workmanship on propeller and spinner.



No. 5 All of these models are Navy planes, the expert craftsmanship of Lieut. Allan Kitchel, Jr. On display at N.A.S. Jacksonville

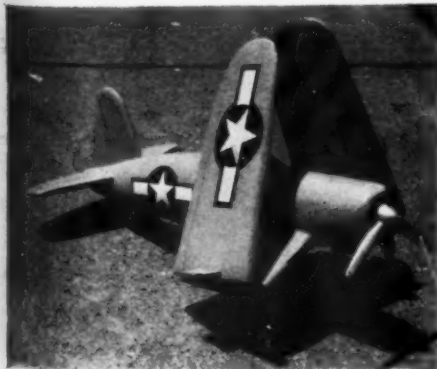
Air Ways receives hundreds of model photographs each month from which about one dozen are chosen. These are the best pictures rather than the best models as no one cares to see poor photos in a magazine. These twelve pictures are published each month, together with the stories of the models, and thus we have Air Ways. But it wasn't until Mr. Wise mentioned that most, if not all of these photos are of solid scale models that we hurriedly poured through the last dozen issues of MODEL AIRPLANE NEWS and were startled to see just how right he is!

So why don't you flying model fans think this over? Perhaps you'll agree that the solid modelers spend a great deal more time and take greater pains in photographing their creations than do gas and rubber fans. Of course you may argue: "Well, there's a lot more detail in a solid and the builder wants to bring it

(Turn to page 51)



No. 6 W. A. Grant designed and built this 80 mph control liner "Bill"



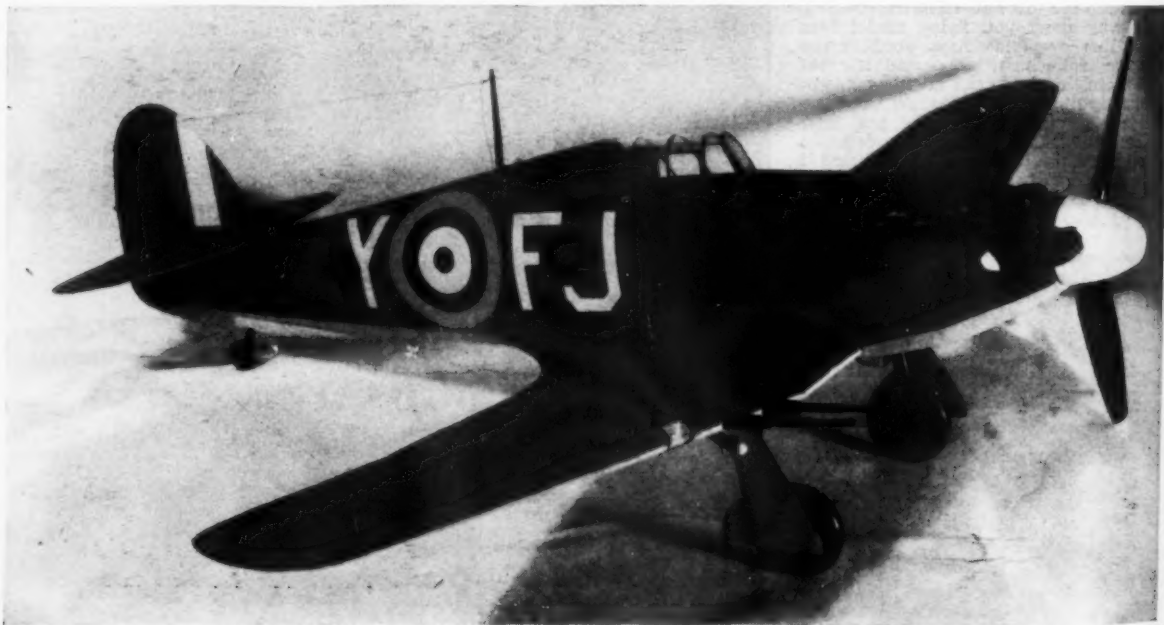
No. 7 Gene Hofmann's Vought Corsair F4U has unique wing folding mechanism and fine detail. Note victories on side of fuselage



No. 8 Finest example of the detail scale builder's art is John Weisner's Spad XIII with faithful reproduction of details



No. 9 Edward Soltis, war worker, built this fine duet, a Grumman *Avenger* on left and Curtiss *Helldiver* on right. Exact scale models

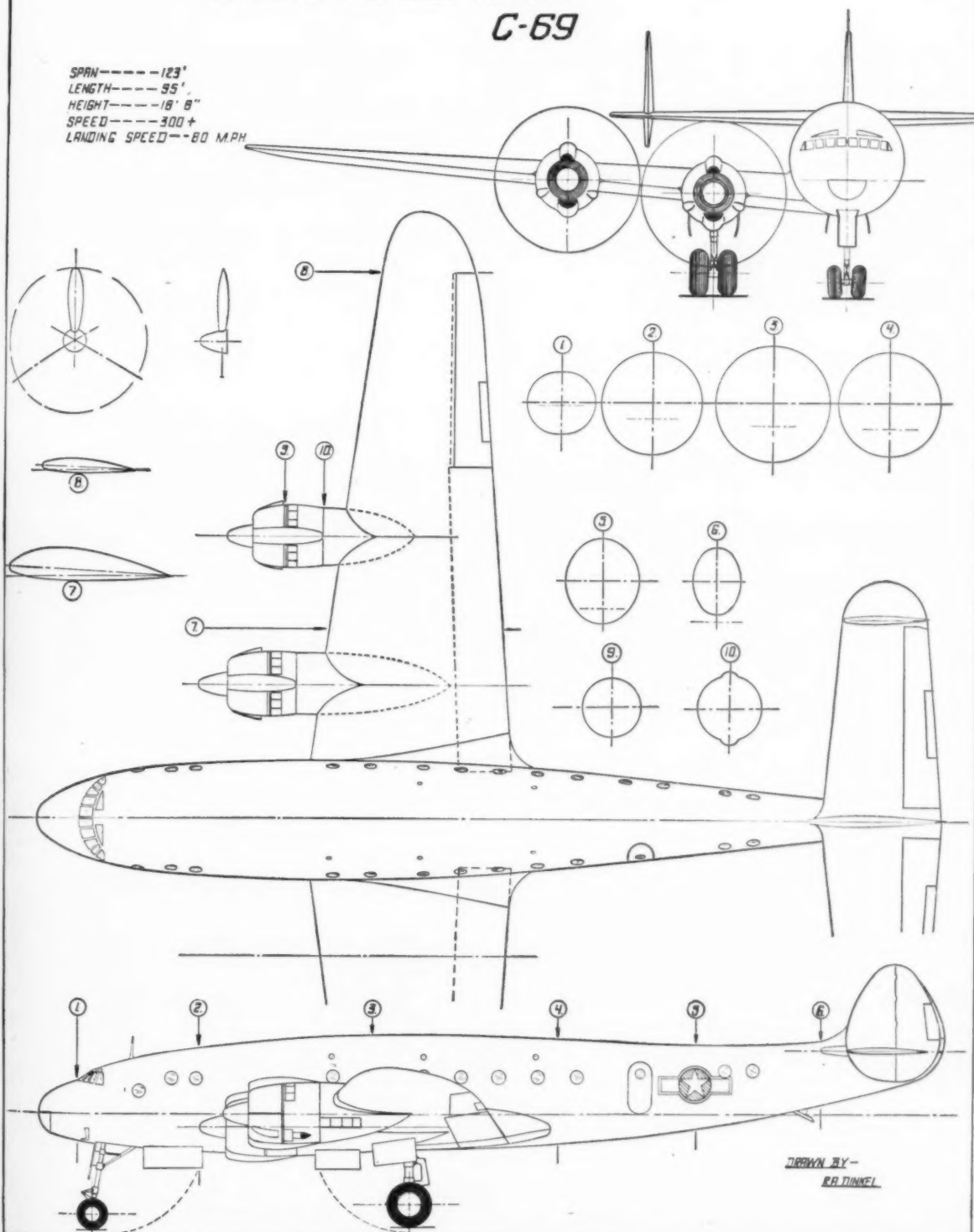


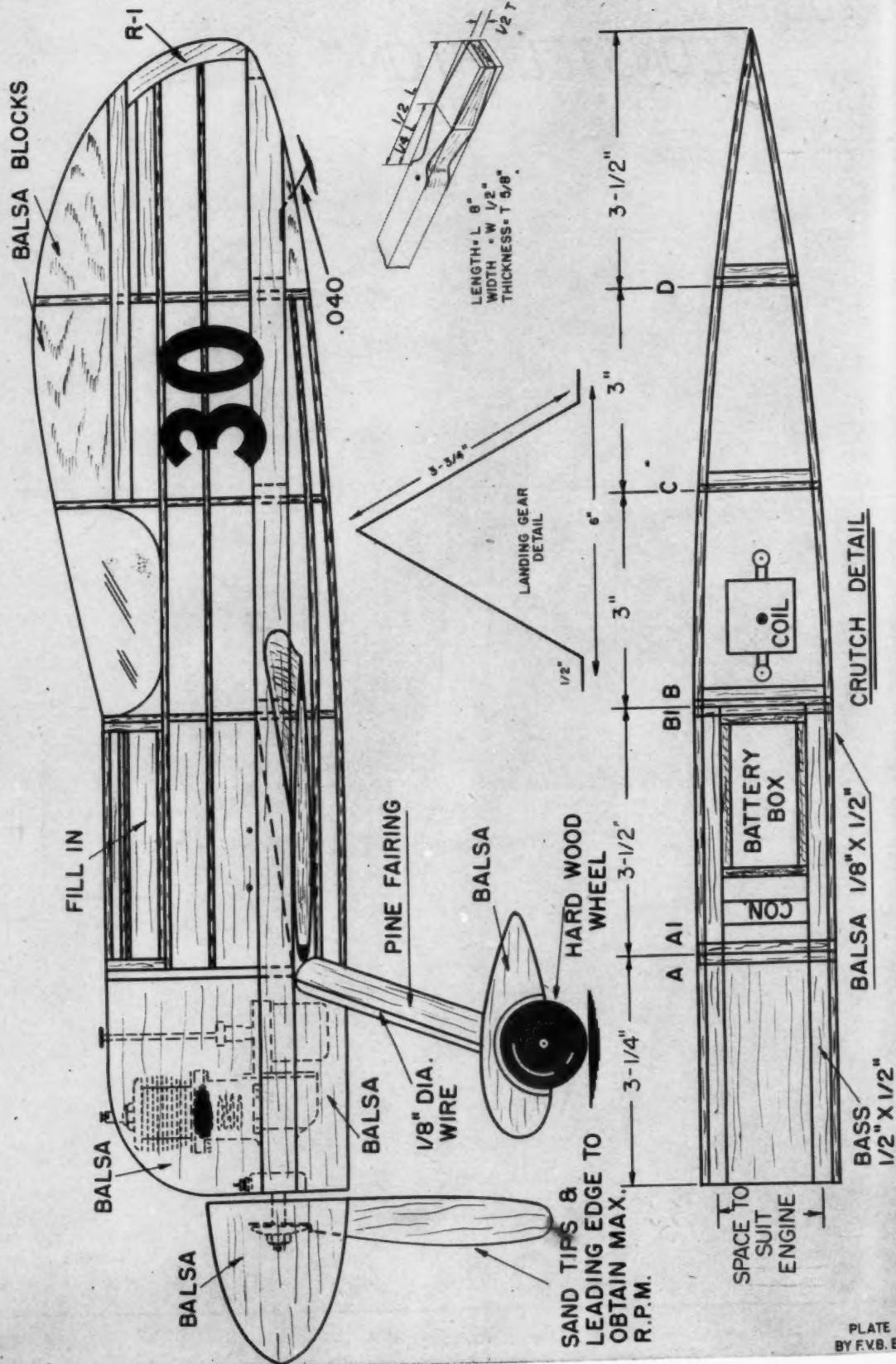
No. 10 Combination modeler-photographer Joseph P. Kochis built this Hawker *Hurricane*, developed and printed picture



# LOCKHEED "CONSTELLATION" C-69

SPAN-----123'  
LENGTH-----95'  
HEIGHT-----18' 6"  
SPEED-----300+  
LANDING SPEED---80 M.P.H.





RES  
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# SMALL STUFF

by F. V. B. EHRLING

**RESPONDING** to every movement of the hand this little ship is as easy to fly as a Baby R.O.G. Designed to be flown indoors it is a swell job. Yet the same ship flies well outdoors when a smooth landing strip can be had to land and take off from.

Compact in design, this ship was made to handle easy with the aid of a spark retarder and an elevator up-spring. The spark is retarded to slow the ship down at which time the elevator up-spring causes the elevator to rise, this in turn brings the nose of the ship up and the ship mashes in to a slow landing. This is more desirable than flaps as they are hard to construct and the elevator up-spring works automatically and comes up as the speed of the ship is lessened.

The adjustment of the elevator up-spring is checked by holding the model outside window of a moving automobile. The spring should rise when the speed has fallen below twenty miles per hour. This can be checked against the speedometer. An Austin timer is used to retard the spark. This is done with the aid of a string connected to the timer and spark control lever. Slack in this line will determine the length of the engine run.

A low wing was used in order to give the ship a high center of resistance. When the power cuts, the nose of the ship will rise increasing the angle of attack thus causing the ship to slow down for the landing. The high stabilizer was used to get it out of the down wash of the wing. Only one side of the elevator needs be connected to the control plate for complete control of the ship. The elevator up-spring is connected to the other side of the elevator.

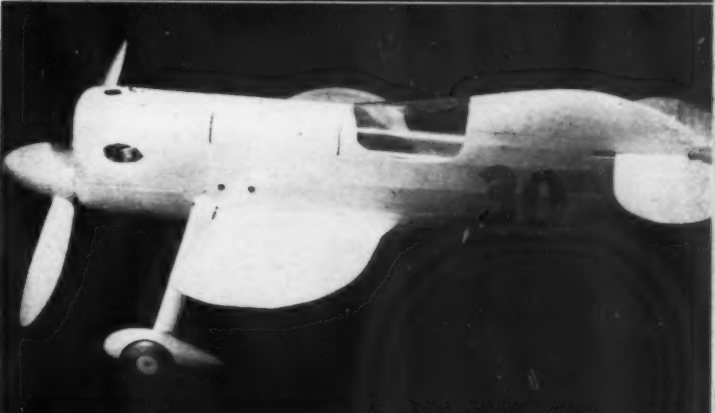
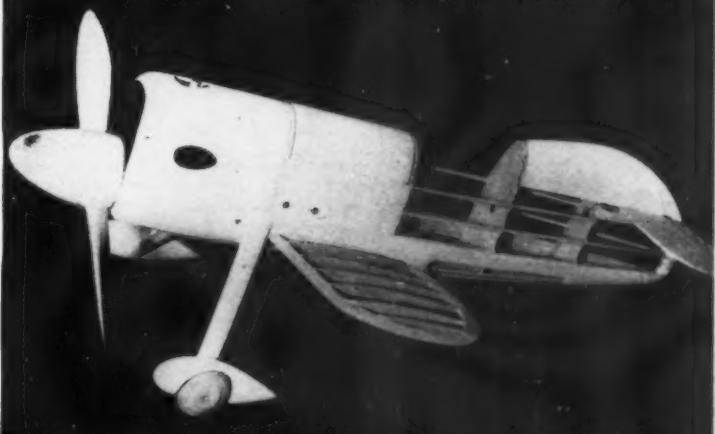
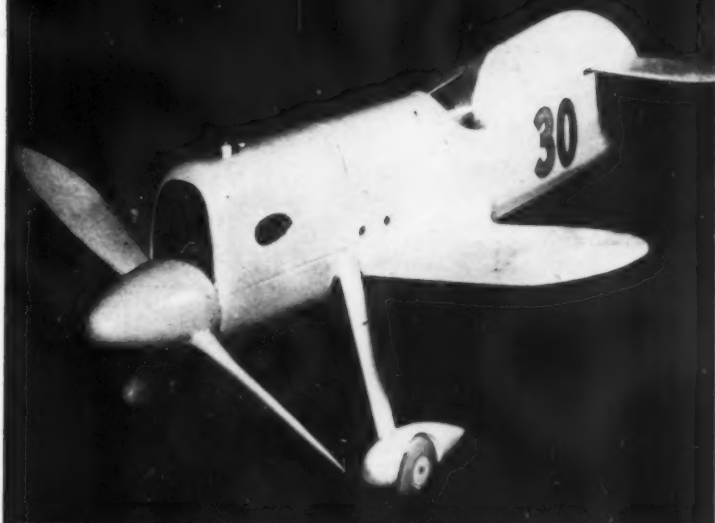
A large spinner was used to streamline the fuselage and reduce the drag of the prop hub, which is great on these high pitch props. Small wheels were used in order to reduce the drag as much as possible and pants were added in order to further this aim. The rudder was carefully blended into the fuselage in order to streamline the rear of the ship and to get a rudder that would not tear off if the ship turned over while landing.

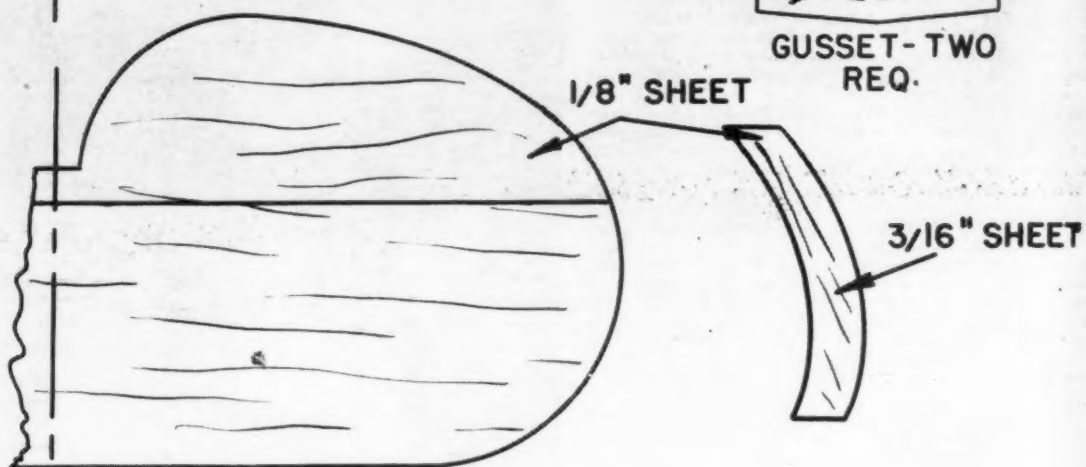
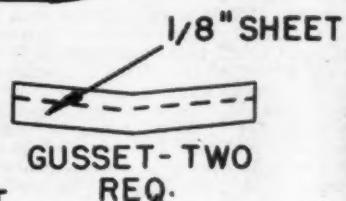
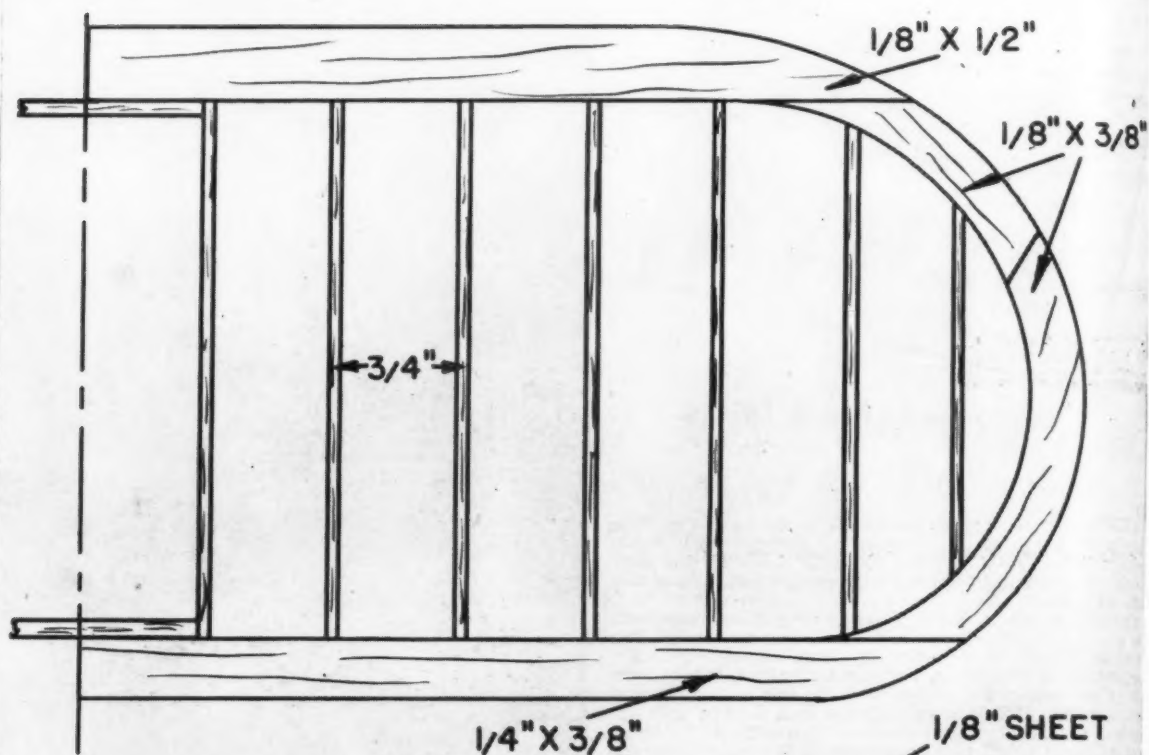
You should now have a fair idea of the ship's performance and be eager to get to your work bench. This little crate doesn't take much supplies so you can probably use those left over from some past ship. The small size will enable you to assemble the ship in a few evenings at home, and when Sunday comes you can take her out and surprise the gang.

This time the wing will be made first. This can be made built up as shown on the plan or similar to an outdoor glider wing. The latter will give your ship a higher speed. However, many of us do not like this type of construction. After the wing is made lay it aside to dry and the fuselage can then be started.

**FUSELAGE:** Enlarge the crutch drawing to the correct size. Cut the bulkheads out and assemble in place. The engine bearers are then added. They should be cemented well as they absorb all the vibration of the engine. Put the top stringers in place now, and fill in with sheet as shown on the plan. The rudder blocks are now added. These should be cemented lightly in place because they will have to be removed later and hollowed out when they are carved to shape. The lower cowl block is now added. This is cemented firmly to the engine bearers as it serves to strengthen them. The upper cowl is now added. This will have to be also hollowed

(Turn to page 48)





SIDE

PANT DETAIL



FRONT

PLATE TWO  
BY F.V.B. EHLLING



# PROP TEMPLATE

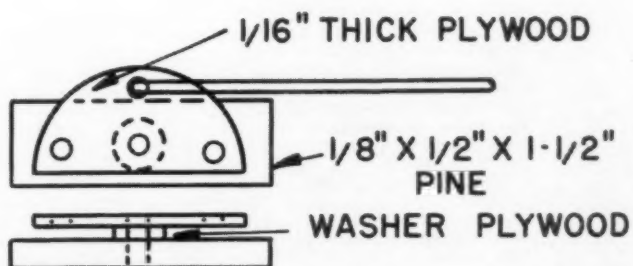


## RIB TEMPLATE



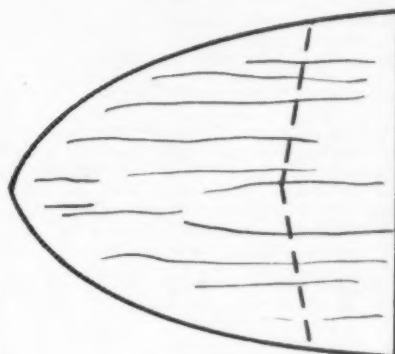
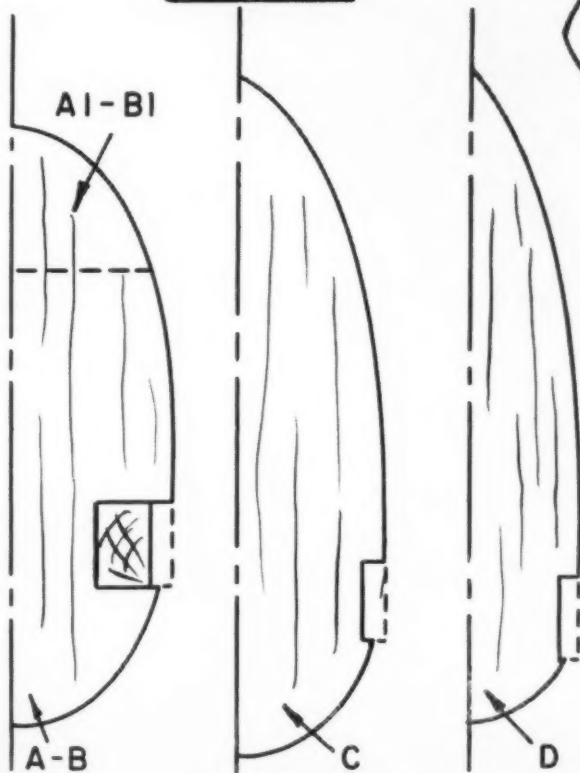
6 RIBS REQ.  $\frac{1}{16}$ " SHEET

## STABILIZER TEMPLATE



BELL CRANK

## BULKHEADS



SPINNER  
CUT OUT TO FIT PROP

PLATE THREE  
BY F.V.B. EHLING



## BALSA WOOD

**BALSA** is easily the most widely used material in model airplane construction principally because of its lightness. It is soft, making it pliable; it has a distinct grain, giving it selectability for direction of load; and it is very inexpensive and easily obtained. These attributes, unfortunately, are not without accompanying demerits, for balsa is particularly weak, fractures easily, is elastically unstable and is heterogeneous in composition. However, a knowledge of these defects should not be used to condemn the material but rather to enhance its value through the proper design and construction of balsa structures. Its weakness prohibits its use for heavy load-carrying members but this can be offset by enlarging the size of the member, its lightness offsetting the usual weight increase in this procedure.

Elastic instability merely means that long, unsupported members are undependable and must be adequately reinforced. In other words, although the proper cross-sectional area is used to carry the applied load, elastic instability will cause the member to bend, lose its rigidity and strength and the whole structure collapse. Heterogeneous composition means that while one selection of balsa will exhibit a specific set of qualities, the next selection may be at wide variance with these figures. Therefore, it is difficult to ascertain and state definitely the exact physical characteristics, such as maximum allowable ten-

sion, compression and shear loads, elongation, or even specific weight. This complicates the design problem and does not allow close figuring.

In addition to the many other "safety factors," an additional margin of about 20% must be allowed for variation in the material over which neither the designer nor the supplier has any control. From the design standpoint, however, modelers have learned to use "plenty" of material for their structure, a result of both the elastic instability and heterogeneous composition of balsa wood. Its extremely light weight, however, minimizes the penalty of such inefficient but necessary design habits to infinitesimal quantities.

Balsa comes in a variety of shapes and sizes and is shipped from Central and South American ports in the same manner as other woods, i.e. long, rectangular planks. It is available from your local dealer in sizes from 1/16" square and 1/64" sheet up to 4" and more squares. With access to a small buzz saw, you can cut the large boards to any size. Most of us, however, simply use ready cut pieces. Flat balsa of 1/32" to 1/8" can be cut perfectly with a balsa knife and straight edge into strips of the desired dimensions. Some regular balsa shippers can cut up to 1/2" reasonably well. With this method it is unnecessary to keep a large variety of strip sizes on hand. Sheet must be purchased, however, and the various sizes stocked.

Balsa is carried in a variety of grades from very soft to very hard and most

dealers stock these various types. A system of color coding has been generalized throughout the trade to simplify the problem of stocking and Fig. 2, notes all the general grades with their accompanying uses. It is always best to follow this code, or the advice of the dealer when selecting different grades of balsa. Most modelers do not have the opportunity to become really experienced in balsa grading and the inaccurate selection of grade may play hob with a well designed model structure.

Balsa is also classified according to grain. Fig. 1 shows the three general "cuts" made on a plank. The "A" cut is "with the grain" and is well suited to parts which must be bent sharply across the surface such as wing leading edges, round fuselages, cowlings, etc. The "C" cut is "across the grain" and difficult to bend without breaking. It is useful for parts requiring rigidity such as propellers, ribs, spars, etc. The "B" cut is intermediate and results in a "general purpose" material. Although the modeler gains access to the material after these cuts are made, it is well to learn to judge the cut by the grain of the strip or sheet so that the proper cut desired for the job at hand may be obtained.

Some dealers carry balsa in a variety of shapes especially processed for particular jobs. The triangular strip is useful for wing and tail trailing edges. Special channel and angle shapes may be available which simplify the construction of spars and longerons. For sheet wings, semi-finished wing section sheets are available frequently and only require the rounding off of the tips and the fixing of dihedral when attaching to the fuselage.

Special cuts, grains, grades and sections of balsa wood are, of course, more expensive but they more than pay for themselves in construction economy and weight reduction. Before you start for your dealer to "get some balsa" and plan on "looking over what he has" to make your selection, figure out as closely as possible exactly what you want and ask for it by name or description. For real contest construction, the best is none too good and it invariably pays to get the right balsa.

## HOW TO WORK BALSA

When in doubt regarding the use of a knife, a plane or sandpaper, use the latter every time. Balsa may be worked faster by cutting it but it can be spoiled in a split second with a knife. Sandpaper is the best means of working balsa, even when there's a lot of wood to be removed. On thick sheets and strips, use a coarse grade of sandpaper and graduate to a fine grade as the sheet grows thinner. Learn to use a finer grade sandpaper in all cases, it may take longer but the results will always justify the expenditure of "elbow grease." When working thin sheet, sand away from you in deliberate strokes and you'll never be bothered by a sudden gouge through the sheet. A wooden block around which the sandpaper is wrapped gives a hard backing and prevents scraped knuckles. Sandpaper is normally not available in hardware stores in grades finer than "000" but many model stores carry grades up to "10 nought." Try some of this super-super-fine sandpaper some time, you'll be absolutely surprised how delicate a sanding job may be done with perfect ease.

To turn wheels, fuselages, etc., a lathe is very handy. These may be found of good quality yet inexpensive and they are well worth while, particularly since so many household knick-knacks may be

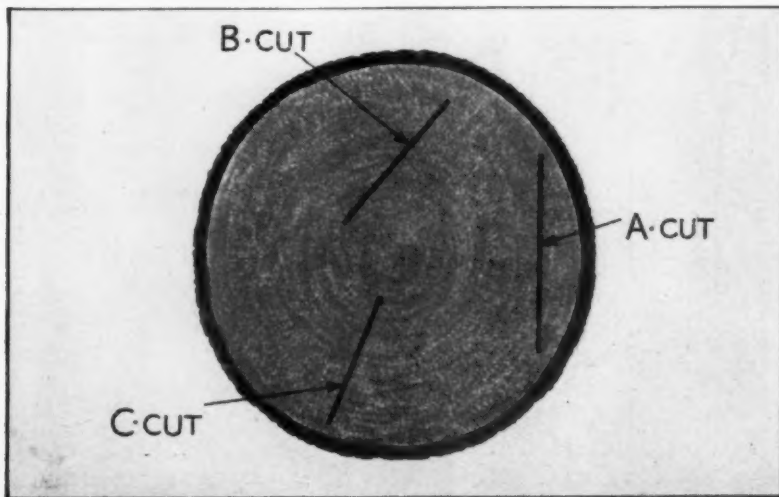


FIG. 1 STANDARD BALSA CUTS

Weight lbs./cu. ft.	Color Code	Use	
		Strip	Sheet
6	Yellow	Planing, filleting	Class "A" covering
7	Light Green	Stringers	Class "C" flat sides
8	Orange	Light spars, longerons	"C" sides and wing ribs
9	Light Blue	Medium spars, longerons	Wing tips, "B" ribs
10	Red	Heavy spars, longerons	"C" ribs, box spars
11	Green	Very heavy spars	"C" ribs, box spars
12	Blue	"A" motor mounts	"C" bulkheads
13-14	Brown	"B" motor mounts	gas model frames
15	Black	"C" motor mounts	strong gas model parts
over	White	Heavy jobs	" " " "

FIG. 2 STANDARD BALSA GRADES

turned out on them. For turning out fuselages they can't be beat and it is a simple job to follow plan curves. U-control jobs with hollowed out fuselages are a cinch with a lathe.

For turning out wheels, any small electric motor will prove satisfactory. Glue the balsa block to the shaft and let it dry thoroughly. After drying, turn on the motor and shape the wheel with a knife or sandpaper. After turning to the proper shape, hold a hacksaw to the work and the wheel will drop off with a flat side.

#### HARD WOODS

Up until the advent of international model competition, balsa wood was practically unknown to foreign modellers. In many countries balsa is unobtainable and many contests have been won with hard wood models, even against American balsa models, a tribute to the fine care and skill of foreign modelers. As a matter of fact there are several champion model builders who prefer the hard woods and they do have many obvious advantages. With the exception of weight and workability, the hard woods have all the strength characteristics that balsa does not have and are superior in every way for construction work. The hard woods are much more homogeneous and exact tables of data are available permitting very close engineering work.

Most modelers have a drastic misconception of the weight of hard woods and for some reason are thoroughly convinced that they are extremely heavy and therefore impractical for model work. This is not true on the basis of strength characteristics and it is the strength-weight ratio that is the criteria for all material selection. With hard woods, much smaller members may be used and structural rigidity and stability maintained or even enhanced.

Pine, spruce, birch, poplar, oak, etc., are available in an infinite variety of types and characteristics but space does not allow their complete presentation. Modelers have a great deal to learn about the hard woods and as gas models get larger and heavier, more and more research and experience with the hard woods will exonerate them of their false "weight" charge.

The real objection to the hard woods is the difficulty in working them, heavier tools, more complicated techniques and far greater skill being required. They offer a real challenge to the champion who looks for new fields to conquer.

#### REED

This is a rather porous material of circular cross section. It bends very easily and when soaked in water then held to a certain curve while drying it will hold its shape indefinitely. It comes in fairly long

lengths (3 or 4 feet) and from 1/16" up in diameter. It can be split quite easily and is smooth and shiny, requiring no sandpapering. Reed is useful for curves, such as wing tips, tail surfaces, cockpit frames, etc. It is rather weak and not recommended for landing gear struts, longerons, etc., and this has caused it to lose its popularity which it had for so many years. For indoor models and contest rubber jobs it should not be overlooked, though, for the job it does so well.

#### BAMBOO

Bamboo is the ancient, almost historic model airplane building material and models of all-bamboo construction from the 19th Century are to be seen in museums and private collections. It has been replaced largely by balsa and hard woods but it is still the best for certain jobs. Bamboo is a heavy, close grained material used where a great deal of strength is required in a small cross-section. It is also very useful for parts under repeated loadings where resiliency is demanded. Landing gears are particularly suited for bamboo because it is flexible enough to absorb the landing gear shocks and yet is very strong.

Bamboo comes in strips 12 to 15 inches long and 1/4" to 1/8" in cross section, called "split" bamboo. It is also obtainable in 1/16" and smaller squares called "shredded" bamboo. Bamboo grows in straight stalks made up of enlarged nodes or joints. A "joint" of bamboo designates that straight portion between nodes. Nodes are about 15" or so apart and it is possible to smooth out this joint when a longer length is necessary. This is not satisfactory, however, as the grain is irregular and the material weaker.

Only the outer 1/16" of any bamboo piece should be used, the inner core being very weak. A good rule to remember is to have the shiny part as one of the wider sides. If the piece of 1/8" x 1/16" the shiny part should be one of the 1/8" sides.

To split bamboo, do NOT begin at one end and run the knife down the length as the split will invariably taper off to the edge. Insert the knife point about the middle and at intervals of 1" or 2" make other incisions, progressing towards both ends from the center. The pieces may now be separated and trimmed to the correct size.

To bend bamboo, it must be heated. A candle flame, a small alcohol lamp or even a pan of boiling water may be used. If possible, always have the shiny side away from the heat while bending. With a flame do not hold the bamboo directly in it but to one side as the flame will char it, drying it out and rendering it useless. When making a very sharp bend keep the piece moving back and forth

along the length so that the whole bend is heated evenly. Without this there will be a series of very sharp bends and not the smooth curve normally required. When making duplicate pieces (wing tips, tail surface tips, etc.) bend one large piece to shape then split it into the required number.

Bamboo cannot be sandpapered satisfactorily, although small "strings" may be cleaned up. A sharp knife is best, particularly for smoothing down small pieces.

#### WIRE

Most wire used for construction in models (ignition wire will be covered later) is music wire which comes in various sizes, such as No. 8, No. 12, etc.

Fig. 3 gives the approximate diameters of the various size wires in hundredths of an inch. The larger sizes are designated by their diameters rounded off to the nearest thousandth: 1/16"—.063, 3/32"—.094, 1/8"—.125, etc. If still heavier material is required, cold rolled steel, called "drill rod" is suitable being tough and strong and having a bright finish. It is admirable for prop shafts, wheel axles, clips of all sorts and excels anything else for such parts because of its great resiliency or springiness. It may be cut with high grade cutters but it is easily broken by the old fashioned bending back-and-forth method while held by a pair of pliers or in a vise.

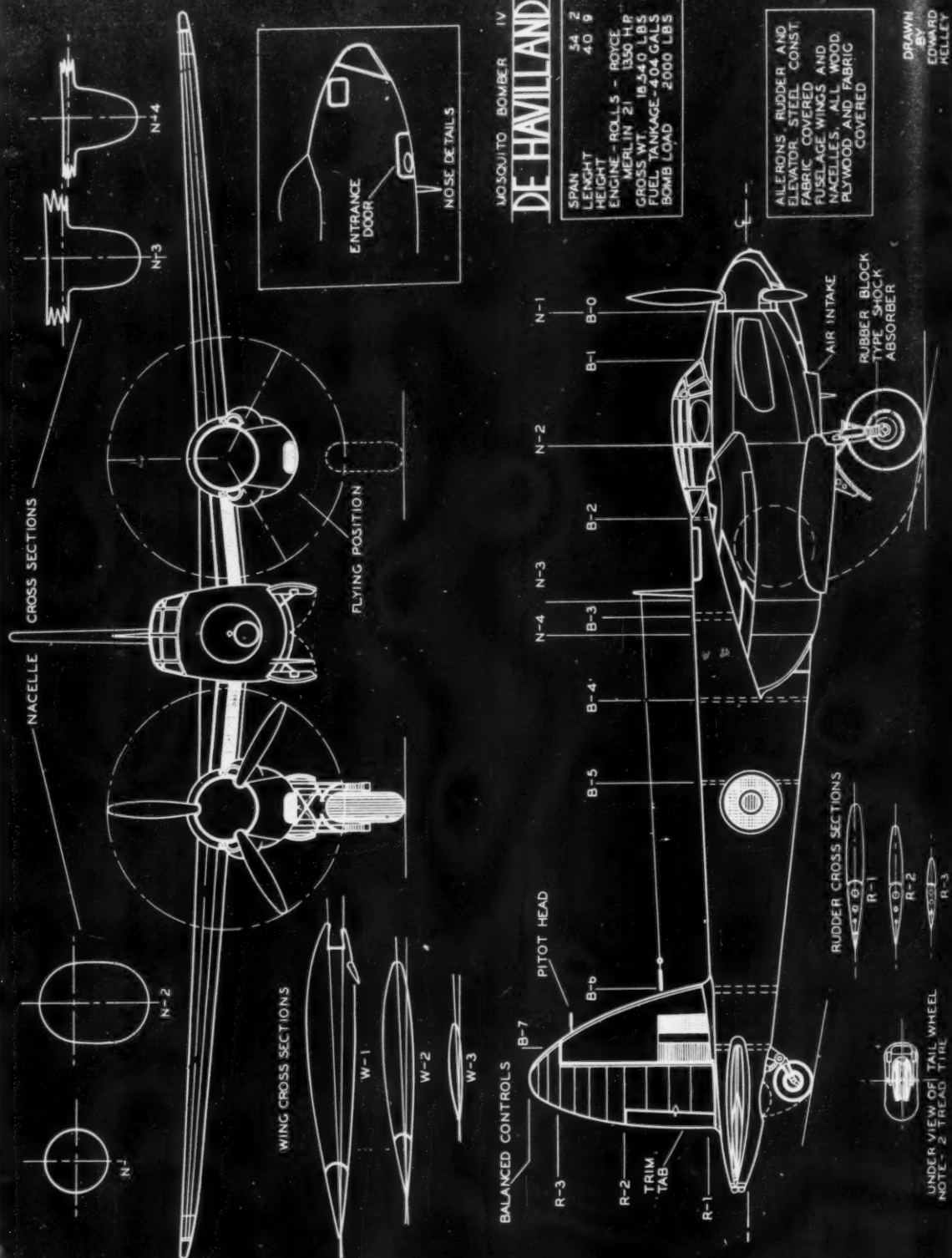
There is no great trick to wire bending but there is a knack to it which is easily learned by experience. Make sure the piece is straight without kinks or bends before you start bending. There are various shapes of special pliers for wire bending purposes and the work is greatly simplified with a pair you particularly like.

Music wire is too tough to be worked with a saw, drill or threading dies in the processed state. It must be annealed first which may be accomplished simply by heating it to a dull red color and allowing it to cool slowly in air. After working, heat it to a blue color and plunge it in cold water. Drill rod is not as hard as

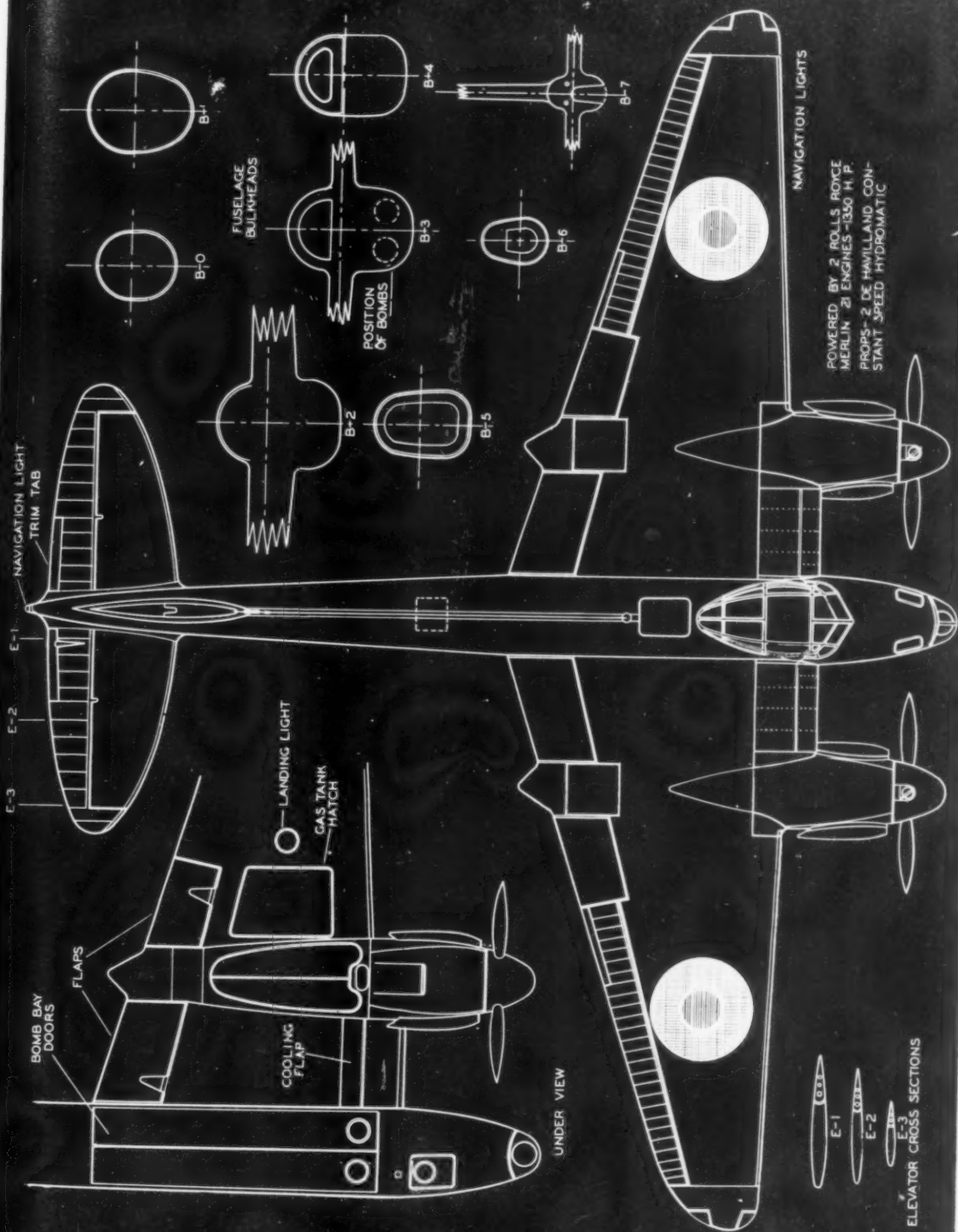
(Turn to page 36)

No.	Diameter	No.	Diameter
1	.010	10	.024
2	.011	11	.026
3	.012	12	.028
4	.013	13	.030
5	.014	14	.032
6	.016	15	.034
7	.018	16	.037
8	.020	17	.039
9	.022	18	.040

FIG. 3 STANDARD MUSIC WIRE

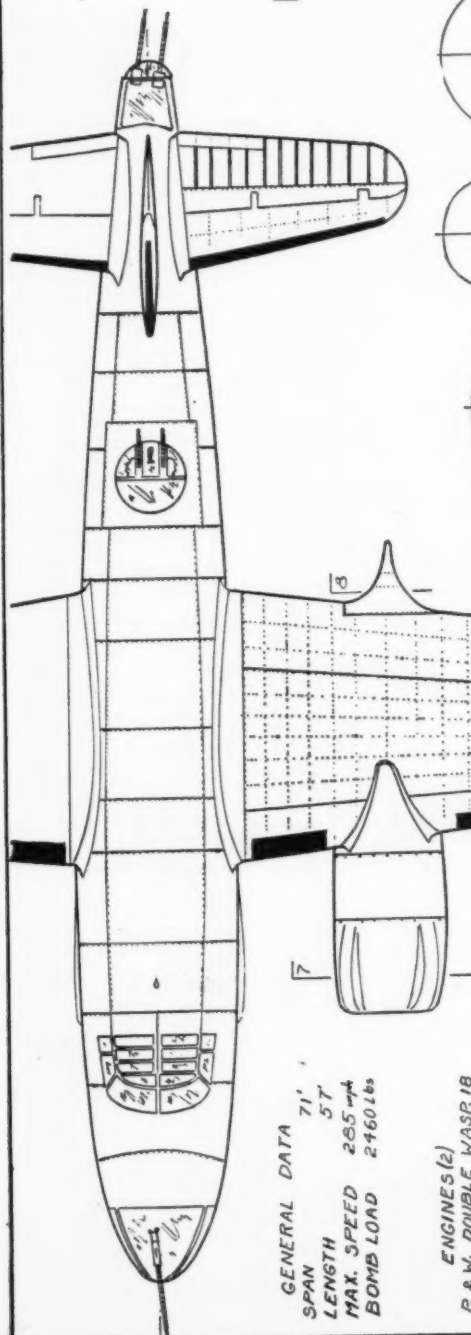
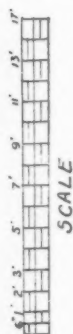






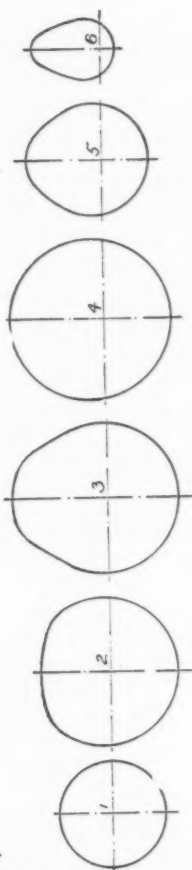
# MARTIN B-26D

DRAWN BY B. DANIELSEN

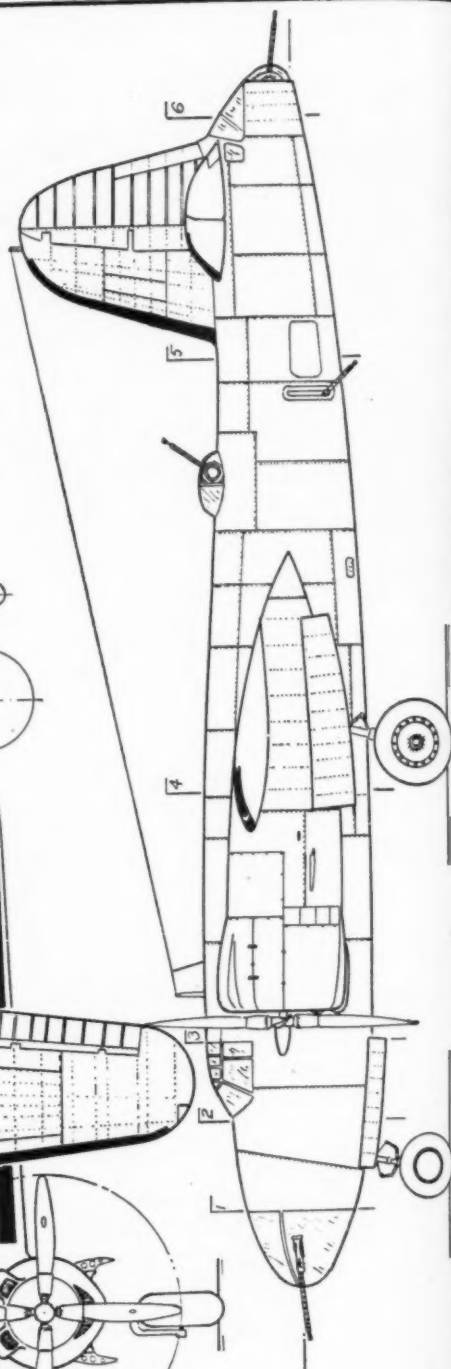
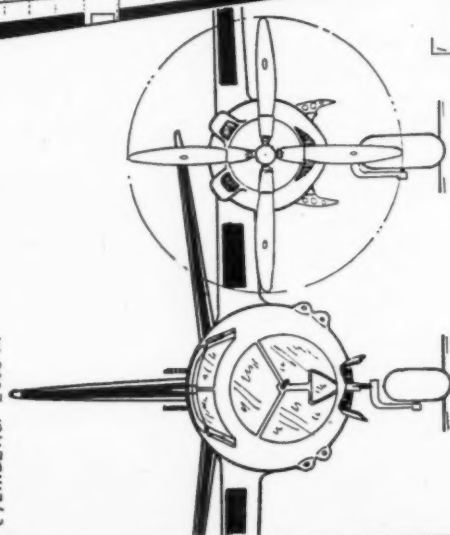


GENERAL DATA  
SPAN 71'  
LENGTH 57'  
MAX. SPEED 285 mph  
BOMB LOAD 2460 lbs

ENGINES (2)  
R & W. DOUBLE WASP 18  
CYLINDERS. 2000 HP



## SECTIONS



Here are the EXACT plane-models  
WITH WHICH ALL OUR FIGHTER  
**BOMBERS and PILOTS**  
WERE  
**TRAINED and BRIEFED**

OFFICIAL 1/72nd  
IDENTIFICATION  
SCALE MODELS

1" equals 4 ft. Ebony  
black finish takes camou-  
flage colors beautifully.  
Name identification on  
underside. Hole at center  
of gravity for hanging.



SB2C-1 (A-25) HELLDIVER

\$2.25



ARMSTRONG  
WHITWORTH  
WHITLEY

\$3.75



C-54 SKYMASTER  
\$8.75



\$1.75  
FOCKE WULF 187



\$4.75  
FAIREY  
SWORDFISH



\$2.00  
BUCCANEER



**Finished  
PLASTIC  
Models**

FIGHTERS, INTERCEPTORS, PURSUITS, GLIDERS, TROOP  
TRANSPORTS and BOMBERS of all types (day, night and  
long range.) Originally created for critical recognition  
training in pre-combat courses, each ARISTO-CRAFT mini-  
ature was officially approved as a flawless, true-scale miniature  
before automatic casting molds were produced. This is the  
ONLY model aircraft collection of its kind!

**NOT KITS—100% Completed**

No construction or assembly work required! Every curve, every silhouette characteristic  
of the real plane is in the ARISTO-CRAFT plastic model. Representing the ultimate in  
scale realism these "little" planes are ideal for schools, museums, model clubs, home  
mementos and specialized aircraft collections. Choice of U.S., British, Russian, German  
and Japanese types. These completely finished models are yours for a fraction of  
average model-building cost!

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(Continued from page 2)

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## Is Different

### DIRECTIONAL CONTROL STICK

This latest Victor Stanzel design makes control line flying more fun than ever! The Directional Control Stick is a short T-shaped rod with a handle at one end and a crossbar at the other. With this stick in the operator's hand the model will fly at approximately the level to which the stick is pointed. Pointing the Control Stick higher causes the model to climb... pointing it down causes it to dive. A motor cut-off line can be used and is held in the operator's free hand.



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PRIME MINISTER CHURCHILL revealed the real extent of damage by Nazi robot bombs recently, stating deaths for the period were as high as during the great Blitz. Considerable reference has been made to "effective" but "secret" British methods of dealing with these flying bombs, but from a technological standpoint there is no completely efficient defense against them. They must be destroyed in the air, either by fighter planes or by ground fire; these methods have brought down a fair percentage. The real problem is to know *when* one is coming and *where* it crosses the English coast. Radio detection makes this an almost exact science but it is always a race between the attacking fighter plane destroying the bomb or the latter striking the ground. With all available fighters needed to maintain air superiority over the Normandy region, it is impractical to maintain a constant patrol for robot bombs along the entire coast of Southern England. Best ray of hope comes from Stockholm sources who claim the Nazis have only a two-week supply of bombs remaining on hand and after these are exhausted there will be no more.

Allied leaders seem to think that the robot bombs were developed primarily for use against the Invasion armies and the Nazis were prepared to send them against landing craft, supply ships and naval vessels. For this purpose launching racks were installed in the Boulogne-Calais region where the brunt of Invasion forces was expected. When General Eisenhower's forces hit the Normandy peninsula instead, the robot bomb crews were frustrated and decided to send their lethal weapons against England on a "fire and hope" basis. The principal concentration of the launching racks is at Pas de Calais, and 9th Air Force low-flying bombers as well as *Fortresses* and *Liberators* are giving this region a round-the-clock pasting.

SEVERAL NAZI "secret weapons" are being used in final futile defense measures. One is a square box which is fired into the air to a height of 6-8,000 ft. in the midst of a bomber formation. The box springs open releasing long strips of metallic substance which supposedly foul plane propellers and thereby bring down Allied bombers. R.A.F. 2nd Technical Air Force pilots summed up their opinion of this new weapon (actually used many years ago): "Completely ineffective!" Another new Nazi weapon is a naval device of some sort referred to mysteriously by Dr. Goebbels. It is difficult to figure out just what he's talking about but he recently broadcast: "Other weapons, fired from our naval vessels, have destroyed..... Allied ships, including a cruiser." (Fill in the blank space with any desired number, but he said 11.)

Weapons which are not designed to attack specific military targets are considered promiscuous weapons and therefore inhuman and in violation of International Law. Use of the robot bomb is another example of Hitler's depraved methods of warfare and for which he and his associates will be adequately and duly punished.

THE NAVY recently played host to a group of writers and some astounding developments were revealed. However, like your Editor's recent Army Air

(Turn to page 40)



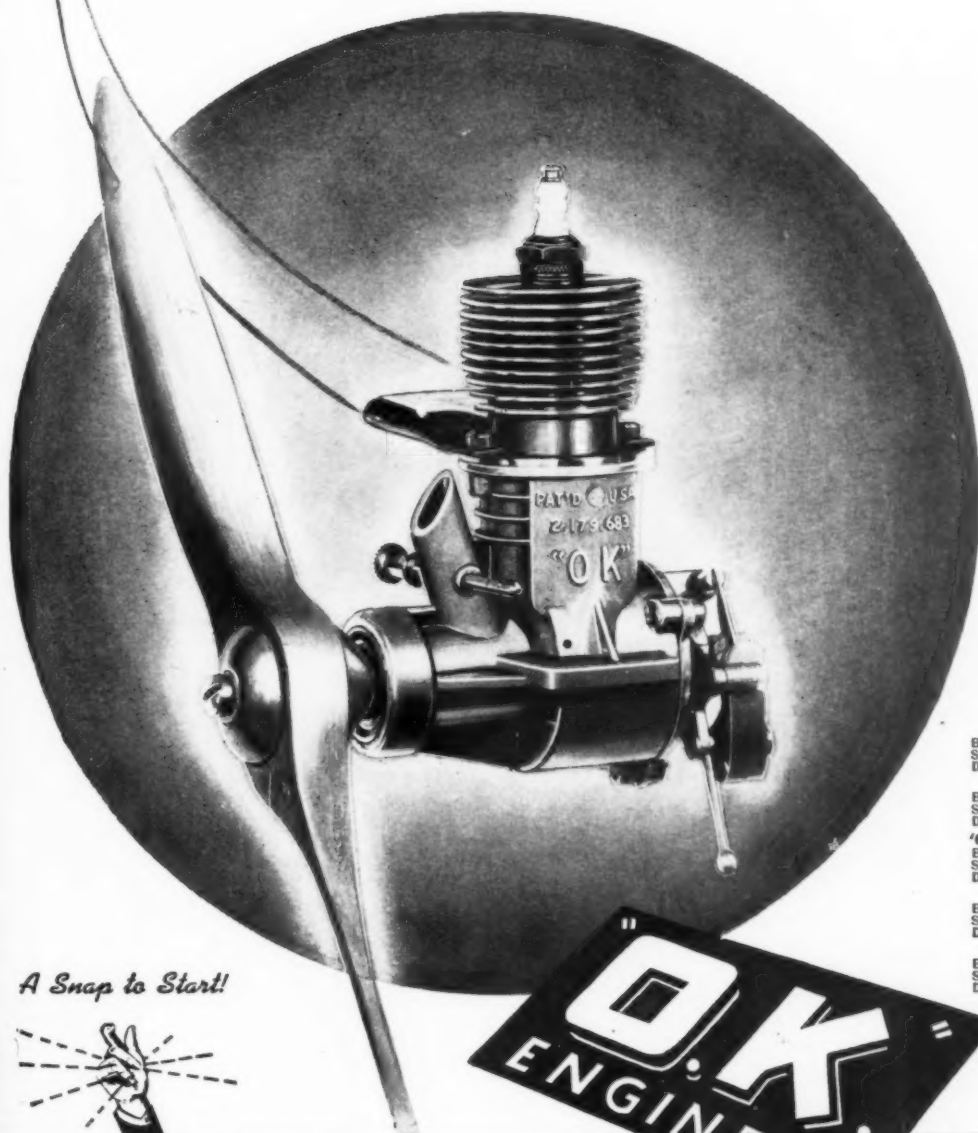
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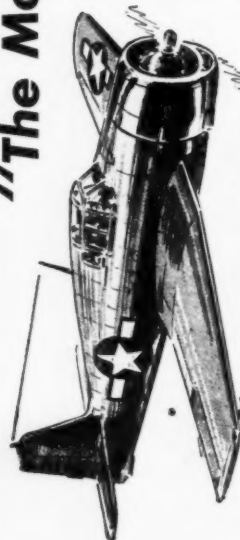
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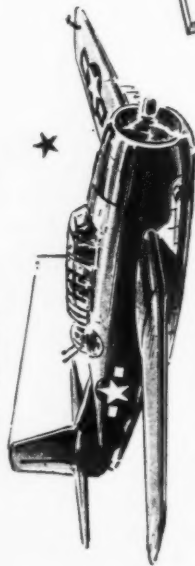
# Cleveland Master Flying Model Group Kits

## "The Models the Men in the Air Forces Build"

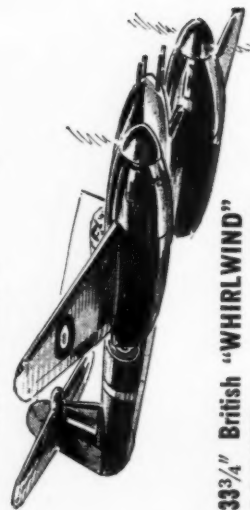
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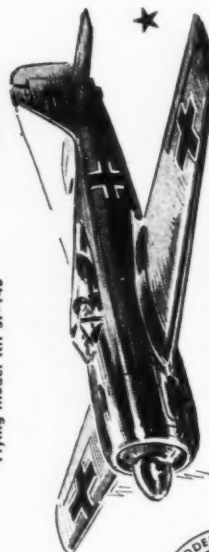
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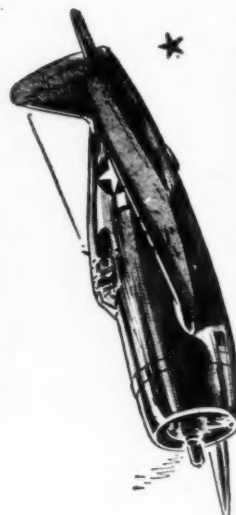
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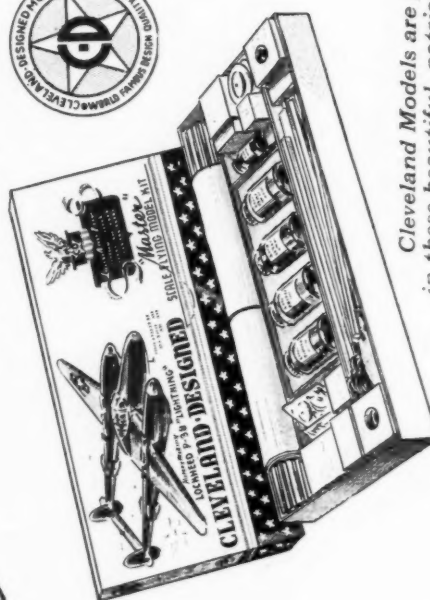


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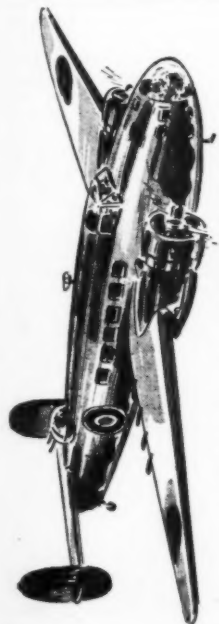
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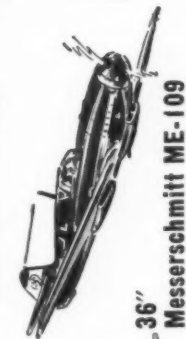
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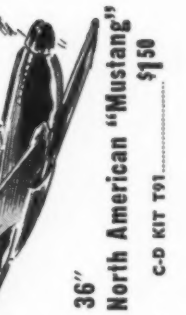
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Exact replica, with feathered type blades and hubs. Our own die-cast special.

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Of course there'll be New Motors soon and we'll receive our share of the new shipments. Get in touch with us at once about a reservation. . . . Quick, get at the top of the list. NOTE: We still continue to pay top prices for your used motors.

## ROGERS 40mm ANTI-AIRCRAFT GUN AND CARRIAGE

Many movable and working features as shown. \$2.95

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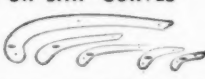


Genuine Dietzgen Drawing Board, 18"x24", including T-square, celluloid angles, curves, protractor, pencils, erasers, ink, paper and triangular scale. 2-bow Charvoz instrument set included. By mail \$17.10.

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5 transparent plastic curves, smallest 5/4", largest 24". Excellent for designing and enlarging plans.

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Size 13"x19", clear white pine, complete with T square, 2 angles and French curve. By mail \$1.75

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30"-60" 45"

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Maple, Transparent Celluloid

Lined Blade with precision-built ebonized Head

18" 24" 30" 36" 42"

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For the Model Airman

# MODEL AIRCRAFT CO.

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## 20th Air Force

(Continued from page 7)

made permanent assignment of the Twentieth Air Force to individual commanders uneconomical, since it is capable of striking from many places at a single target, and its employment requires close coordination of operations.

The Twentieth Air Force will be in the nature of an aerial battle fleet, able to participate in combined operations, or to be assigned to strike wherever the need is greatest. Just as the naval fleets are available for assignment by the Joint Chiefs of Staff to any vital project, so the Twentieth Air Force can likewise be assigned. It is not, therefore, because of its great potentialities, the weapon of a single agency of the Army Air Forces, but a central aerial battle fleet in whose employment and deployment all the top commanders, including air, land and sea, will have a voice, and all of whom will be kept in constant touch with its operations.

The planes that participated in recent Superfortress operations in the China-Burma-India Theater were elements of the Twentieth Bomber Command, the first B-29 organization which served as the nucleus for activation of the Twentieth Air Force. This command received the first B-29s that came off the assembly line and pioneered the principles of very long range bombardment at Army Air Force flying fields in Kansas, under General Arnold's personal direction.

A substantial portion of this command's personnel, from commanding officers to enlisted gunners, is composed of battle-seasoned veterans of other types of bomber aircraft who had completed their requisite number of combat missions before assignment to the Superfortresses. In command is Brigadier General Kenneth B. Wolfe, U. S. Army, of Riverside, Calif., who recently received the Distinguished Service Medal for his "supervision of the entire production program of the AAF from 1939-43, including developing and refining the Superfortress and in training the first groups of personnel." General Wolfe's chief of staff is Col. C. A. Horn, Air Corps, Liberty, N. Y., who formerly was chief of operations division, Air Staff, in Washington. He was awarded the Legion of Merit recently for outstanding accomplishment in that capacity in 1943. Brigadier General John E. Upston, U. S. Army, of Tawas City, Mich., formerly in the Office of the Chief of Operations of the War Department as Chief of the African and Middle East Theater Unit, is assistant chief of staff to General Wolfe for operation.

General Hansell, as chief of staff of the Twentieth Air Force, will maintain his headquarters in Washington on the staff of General Arnold. He is a native of Fort Monroe, Virginia, a graduate of Georgia School of Technology, and an Army flier since 1928. He was a member of the famous "Three Men On A Flying Trapeze" aviation acrobatics team which participated in the National Air Races at Cleveland, Ohio in 1934. By 1940 he was chief of operations planning in the Foreign Intelligence Section, Chief of Air Corps, and in 1941 was sent to London as a special observer for the General Staff and Air Staff. From August 1942 to October 1943, General Hansell was a Flying Fortress Bombardment Wing Commander in the Eighth Air Force, stationed in England, returning to the plans division of the Air Staff where he functioned as Air Planner on the Joint and Combined Planning



Staffs under the Joint and Combined Chiefs of Staff, from which he received his present responsibilities.

General Wolfe was in the aviation section of the Signal Corps in the World War, and was continuously identified with U. S. Army aviation through the peace years. At the outbreak of the present war he was chief of the production division, Materiel Center, Wright Field, Ohio. In June 1943 he was designated Commanding General of the command which later developed into the Twentieth Bomber Command.

General Upston, assistant chief of staff for operations for General Wolfe, has been in military aviation since 1917. He was one of the Air Corps pilots who in 1939-40 piloted members of Congress on a 20,000-mile inspection tour of U. S. Army posts in this country and Latin America. When war was declared he was in the War Planning Division of the War Department General Staff, and was transferred to the Office of the Chief of Operations, War Department, when it was organized in March 1942. From the post of Chief of the African and Middle East Theater Unit he was selected for his present assignment as General Wolfe's chief assistant.

## VICTORY

### Solarfly the Starduster

(Continued from page 13)

shapes. Then finish with wood filler and glue. All joints should be cemented thoroughly at least two or three times. After the entire fuselage is sanded completely it is covered with silkspan. Silk is much better if you can get it. If silk is used, clear dope at least five times and color dope, at least the front of the ship, with three coats of your favorite color. If desired, a cover for the battery box may be made of 3/32 sheet and held on with masking tape.

**TAIL ASSEMBLY**—The elevator surfaces are built in the conventional manner. The main spar, which is of 3/16" x 1/2" hard balsa, is tapered before it is pinned onto the plan, and the leading and trailing edges are then pinned. The ribs (which you will note are not cut to an airfoil at this stage) are inserted. After the assembly is dry, remove from plans and reglue. When dry, the entire assembly, including ribs, is cut by free hand curve and sanded to shape. Remember to cement on the two tail skids.

The rudder is built flat; all edges are cut from 3/16" sheet. When completed the entire assembly is sanded.

**FINISHING TAIL ASSEMBLY**—First cover elevator, preferably with silkspan. Dope both sides at once to prevent warps; give it three to four coats of clean dope with a light 10/0 sanding between coats.

Now cover the rudder in the same fashion. When you have doped rudder, glue it onto the top of the elevator. Make sure it is at right angles to the elevator by using a T-square.

You may add a former, corresponding to former "J" on the body, and make a fillet between the rudder and elevator, of silk. This will add to the streamlined effect of the ship.

**WING**—The wing is a very efficient type of construction. It makes use of capstrips and sheet balsa covered leading edge, which prevents sags in the paper covering between the ribs.

The first step is cutting all the ribs as shown on plan. Cut all the main ribs, put them in a vise and sand as a unit. This will make all the ribs a uniform



32" Span. Length 25". 1" Scale  
Set has turned cowl and motor unit, set of colored paints, 7 oz. glue, wheels, full size drawing, and all parts. Set \$4.50

### CURTIS P40F NAVY PURSUIT

Movable Controls

**ORDERING DATA**  
Add 20c to each set for postage and packing. No C.O.D.'s.  
SERVICING MEN: Restrictions prohibit sending large packages to A.P.O. or F.P.O.



Set has all parts printed, set of colored paints, plan. Set \$2.95  
22 1/2" Span  
BOEING F4B4 NAVY

### VOUGHT CORSAIR F4U1 NAVY FIGHTER



40" Span. 1" Scale. Length 31 1/2"

Special De Luxe Model. Very stable flyer. Set has all parts printed on balsa, 4" turned motor front, etc., set of colored paints, insignia, full size drawing, and all parts. Construction set \$4.50

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size. Cut and sand the tip ribs two at a time.

The trailing edge and tips are cut from 3/16" hard firm balsa. Decide whether you are going to build a "V" center or a flat center section, either are satisfactory. On two ships we found the flat center section to be easier to handle and adjust. First build center panel by pinning the main spar of 3/16" x 1/2" hard firm balsa on the plan—raising about 3/16 of an inch above the surface of the plan. Remember to extend all spars at least 1" in order to be safe in case of an error. If the "V" center is to be used, build the center panel up to the center rib. If the flat center section is to be used build only up to the first rib. Notch the trailing edge to correspond to the ribs and pin down to the plans. Next, insert the ribs on the spar and glue to spar and trailing edge. Now cement on the leading edge of hard 3/16" square balsa into the notched ribs. Glue on the top front spar of 1/8" square hard balsa in the notched ribs.

After this assembly has dried remove it from the plan, and reglue all joints. Build the other three sections in the same manner. First join the tips in this fashion: Pin down a finished center panel to plans, and square the main spar. Obtain a block 3 1/2" high, and block up the tip. Mark off the angle on the tip main spar and cut the spar at that angle. You may also obtain the same angle by the gussets on the printed wing plans. Cut the dihedral gussets of 3/16" sheet and glue the spars together, pinning the gussets in place. Make the center dihedral splice in the same way—using either the gusset for the "V" wing or the gusset for the flat wing.

If the flat wing is used, you will have to build a center section, using the center rib and the two surrounding outside ribs. Use a 1 1/2" block to prop up the center panels. You will note that all the dihedral ribs have to be notched to a larger space to accommodate the gussets. When these joints are all dry, all the other braces such as leading edge, trailing edge and rib triangular gussets (on the dihedral ribs only) are now ready for insertion. Now, reglue the dihedral joints several times. This type of dihedral brace has been used on many types of models and was found to be very strong.

**FINISHING WING**—Sand all the spars, leading and trailing edges. Do a nice job on the tips, making them smooth and streamlined. Now cement onto the leading edge of the wing the 1/16" medium sheet balsa, from the leading edge to the rear or the 1/8" square top balsa spar. If you have any trouble bending the sheet balsa, steaming it lightly will do the trick. After this is dry, cement to every rib, the 1/16" x 1/4" medium balsa capstrips starting from the very end of the sheet balsa leading edge and fairing into the trailing edge. When all this is dry, sand thoroughly. Make sure there is a smooth joint where the sheet balsa meets the leading edge, where the sheet balsa meets the beginning of the capstrip and where the capstrip meets the trailing edge.

Covering the wing with silkspan is recommended. Silk is used to cover the outer part of the wing from the center ribs to the second rib on each side. In other words, about 3 1/2" out from each center should be covered with white silk. Give wing three or four coats of clear dope. Cover with colored paper, and use another color as a small trim. This will save much weight instead of completely color doping the whole wing.

**ADJUSTING AND FLYING**—Take your finished *Starduster* out to a field—a big one, without trees, houses, wires and other dangerous obstructions—if such a field can be found!

First, tie the tail assembly down to the body with 1/8" rubber horizontal to the fuselage. Now set the ship down and tie on the wing with 3/16" or 1/8" rubber and see that it is lined up with the fuselage. With a 3/16" block of balsa under the leading edge of the wing, and a 3/16" block of balsa under the trailing edge of the elevator, the ship will float right out of your hand as you run along with it.

Try some hand glides! Set the rudder about 1/16" toward the right (looking from the rear) and set the wing so the leading edge of the left wing is slightly forward—this will prevent spins under power and give a beautiful right turn to the glide.

The motor should be offset about two degrees to the left and a thin washer should be put under the rear bolts to give the necessary upthrust. Remember the motor is mounted with the flanges beneath the wooden motor mounts.

Now for the first power flight—and get the motor running smoothly at a medium low speed. Set timer for not more than ten seconds and run with the ship until it lifts out of your hands. *Do not throw it!*

The *Starduster* should go up in a slight left turn and when the motor cuts she should roll into a smooth, flat glide to the right. Fly with more power until you have reached the maximum. The ship will not need the full power of any motor above .16 cubic inches piston displacement. As the power is increased, the ship will turn more to the left under power. Some ships may need very little right rudder, which will give more turn in the glide. But, when giving right rudder, be very careful of a loop, because the *Starduster* is very sensitive to rudder under high power.

With the new "wartime" rules, the *Starduster* is excellent! By just lowering the power, you can get it up fast enough to take advantage of low ground currents without being sucked up into the strong thermals above. This arrangement will consistently give "contest" flights of around four minutes.

### VICTORY

## Talking Shop

(Continued from page 25)

music wire and may be worked in the "as purchased" state.

Music wire is sold by dealers in pieces about 3' long and perfectly straight. It may be bought in hardware stores in coils of 100' but the wire must be straightened before using. For this reason the 3' lengths are preferable despite the slightly higher cost.

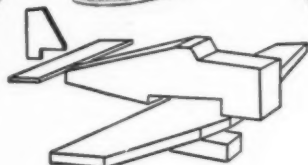
Another wire very useful in model work is tungsten, one of the strongest elements known. The No. 1 size of tungsten wire is about one-fifth the diameter of a human hair and practically invisible but is amazingly strong. The No. 5 size is as large as the average hair and has about twice the strength of music wire. Tungsten wire is useful for wing bracing and tying struts into ribs and spars. A very useful application is the use of microscopic tungsten flying wires which have infinitesimal drag but enormous strength and will enable you to design a much lighter wing, particularly at the fuselage joint.

### VICTORY

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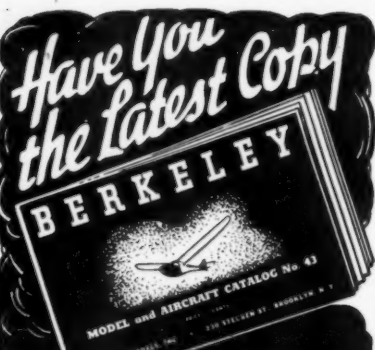


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## Boeing B-29 Bomber

(Continued from page 7)

tremendous load, but takes off from a normal runway with no more run than today's "medium" bombers. Weight is twice that of other "big" bombers now in action, yet it touches the ground lightly and comes to a stop in a distance suggestion of a city block.

But this monstrous beauty was not created by a sudden master stroke of genius. It grew like a plant, carefully developed, nurtured, trained, tested and perfected. Into its structure went millions of dollars, more millions of man-hours of mental and physical energy, the very lives of some of its foremost proponents.

It is not possible to tell you how the B-29 was created, there is not room to tell you why it was brought into existence, but we can tell you what it is.

The B-29 is a four-motored, all-metal mid-wing monoplane with tricycle landing gear, pressurized cabin and four-bladed propellers. It is adequately armed and armored. It carries a bigger load farther than any other bomber of the war. Here are its essential features:

**WING**—The problem of an airfoil for large airplanes was explored by the Boeing Aerodynamics Unit long before the design of the B-29. A very promising section had been produced for the Boeing XPBB-1 *Sea Ranger* characterized by an extremely thick mid-point and reflex trailing section on both the upper and lower surfaces. This thick section has an extremely low drag coefficient at high speeds and abnormally high lift coefficient. With this high L/D ratio, area was greatly reduced and a large span gave a high aspect ratio, goal of airfoil design. The low area, however, introduced the problem of extremely high wing loading which would adversely affect ceiling, landing and takeoff characteristics. Boeing beat this problem with an improved wing flap. The final development of this amazing wing was the Boeing 117 airfoil, used on the B-29.

The structure consists of a single main spar composed of a flat sheet web with heavy extruded cap strips. These strips weigh 255 pounds after machining and are the largest extrusions ever used in a production airplane (others used machined bar stock). The wing is made up of the main section, continuous through the fuselage, containing the four power plants. The outer panels are bolted to attach angles and the tip sections are also removable. The complete wing assembly weighs 22,000 pounds. It has a span of 141.2 feet, an aspect ratio of 11.5 and an area of 1,738 square feet. The wing loading is more than 62 lbs. per sq. ft. It has 4 1/2° dihedral and 7° sweepback.

The flaps are of the general Fowler-Zapp type moving back and down upon extension. The wing area is increased 19% by flap extension. About 25° of flap is used for take-off and the full travel for landing which takes place slightly under 100 mph.

**FUSELAGE**—Structure is of aluminum alloy monocoque design with skin panels butt jointed and flush riveted. The cabin is designed for pressurization when required. It may seem to the casual observer that the long cigarlike fuselage of the B-29 is an empty hollow shell, but a trip through it reveals equipment of every size and description. The giant is entered through a steep ladder under the belly and once inside the enormous, circular area of the fuselage becomes ap-

(Turn to page 42)

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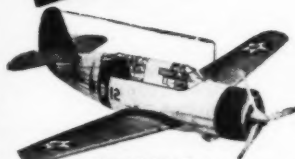
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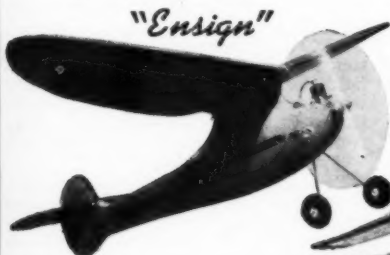
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Forces trip, most of these developments must remain a secret until the proper time. The venerable Naval Aircraft Factory at Philadelphia has been completely reorganized and enlarged and is now the Naval Aviation Materiel Center. Complete Laboratories for the design and development of engines, instruments, accessories, electrical and radio equipment and aero medicine are available and in full use. At nearby Naval Air Station Patuxent is the Navy's flying and shooting experimental facilities with two monstrous fields, one with a 10,000 ft. runway! The Navy is running a close race with the Army in the development of new devices and among these are rocket launching racks for every type of combat plane; gun sighting and firing mechanisms; a new jet propulsion fighter plane; rocket-assisted takeoff devices for combat and cargo planes; remote-control gun turrets mounted in airplane wings that may be dropped if necessary to lighten the load; and dozens of other equally astounding developments. The Army Air Forces Materiel Command has lots of amazing developments up its sleeve. But keep your eye on Naval Aviation!

**SURFACE FORCES** of the Navy are equally ahead in the engineering development field and among their new vessels are: six 45,000 ton Iowa class battleships 880 ft. long with 125 anti-aircraft guns, 20 5-in guns and nine 16-inch guns; six 27,000 ton Alaska class large cruisers with nine 12-inch guns and a 35 knot speed; and new 45,000 ton battle carriers which will be the largest ships in Navy history. Designed to carry twin-engined combat planes of new types, these monstrous carriers will introduce entirely new tactics into Navy warfare and will bring sea-going Airpower into a newer and far more deadly scope.

**THE WAR DEPARTMENT** has released information on several new types of combat planes, some of which have been discussed in these columns before. The Bell P-63 is known as the *Kingcobra* and is a far more deadly version of the P-39 *Airacobra* which it outclimbs, outspeeds and outshoots many times over. We saw the *Kingcobra* in action on our recent tour and can vouch for its sleek lines and vastly improved performance. It mounts a 37 mm. cannon and four .50 cal. machine guns. The Bell P-59 jet-propelled fighter has been officially named the *Airacomet* and a more apt sobriquet could not have been chosen. A special version of the North American P-51B *Mustang* is known as the F-6 and carries a battery of cameras. The new Douglas A-20G mounts up to nine .50 cal. machine guns in the fighter version, and in the bomber version a new large transparent enclosure is fitted to the nose for the bombardier.

The new Lockheed P-38J *Lightning* is credited with a top speed of 420+ as is the Republic P-47D *Thunderbolt*. This "plus" is to be noted in comparison with the 425 mph ("no plus") official top speed of the *Mustang* P-51D. The Lockheed C-69 *Constellation* has a pressure cabin for operation at 30,000 ft. The Martin B-26B *Marauder* carries provisions for a torpedo. The Supermarine Spitfire VIII has a retractable tail wheel. The Waco CG-13 has a conventional landing gear with tail wheel; the CG-13A has a tricycle landing gear. The Douglas C-74 is a greatly enlarged version of the C-54. Known as the DC-7, it is powered by four radial engines of 3,000 hp each, has a span of 173 ft. 3 in. and is 93 ft.

10 in. long. It weighs 145,000 lbs. fully loaded and thus makes the B-29 look like a little brother. The Lockheed *Hudson* bomber, which played such a vital role in the early War years, is now used as a transport plane and is known as the C-63 by the A.A.F. Airspeed *Horsa* gliders are now in use by the A.A.F. in England. No designation has been released but the *Spitfire*, *Mosquito*, *Beaufighter*, etc. used by the A.A.F. do not have U.S. designations either.

**POWER OF THE** Rolls-Royce Griffon engine used in the new Supermarine Spitfire XII was announced as 1750 for takeoff, something of a disappointment to many who believed it much more powerful. The Rolls-Royce Merlin 61 which it is designed to replace develops 1650 hp in its latest version, and the design and development of a new, larger engine for a mere 100 hp hardly seems worth the expense and time.

**REPUBLIC P-47 Thunderbolts** have been used by the Russian Air Force for some time, it may now be stated. Not at its best under 30,000 ft. one wonders just what the Russians are doing with *Thunderbolts* as their air-war is fought principally at low (12-15,000 ft.) altitudes.

**NORTH AMERICAN AVIATION'S** Inglewood, California, plant has completed the last B-25H *Mitchell* bomber and has converted production to *Mustang* fighters. As the last *Mitchell* rolled down the line jigs were removed from the floor, one just 7 minutes after it had been used for the last time. North American Kansas plant will continue production of *Mitchells*.

**THE CURTISS A-25**, Army version of the *Helldiver*, is being modified and turned back to the Navy. All A-25's are being delivered to Delta Air Line modification center and reworked for the Navy and Marine Corps. The Army has abandoned its dive bomber program but the Navy is going ahead with the tactical development of the type.

**CONSOLIDATED MODEL 39**, commercial transport version of the famous *Liberator* is now undergoing licensing tests at Washington, D.C., by the Civil Aeronautics Authority preparatory to service either by the military or commercial airlines.

**ACCORDING TO** Lieut. Robert Nelson, shuttle bomber pilot between England-Russia-Italy, the Nazis are using women crewmembers. He said he distinctively saw two men and two women parachute out of a Junkers Ju-88 as it was being shot down.

**YOU CAN** believe it or not but *parapooches* are actually and literally being used in this war, according to a recent statement from the War Department. Dogs of the K-9 Corps have been used in the paratrooper invasion of Sicily, Italy, and in the Invasion of Normandy. They are dropped with the rest of the troops in small chutes and land on all fours. They are released by the nearest paratrooper and sent on their duties which include: carrying first aid kits to wounded men; carrying messages between isolated units; doing night sentry duty; and tracking down snipers. Army officials are amazed at the eagerness of the dogs to jump. At a spoken signal from the jumpmaster the dog leaps out into space and the static line releases his tiny parachute. The dogs obviously enjoy the proceedings and there is a much smaller injury rate among them than among their human comrades because their four legs simplify landing.

(Turn to page 48)

# BUILD A WAR PLANE MODEL ON A TUBE!

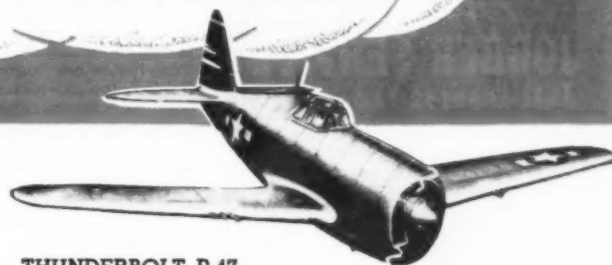
Two Sensational Construction Features Combined  
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Here are four new kits which so many of you modellers have asked for . . . a size and a price to suit every builder.

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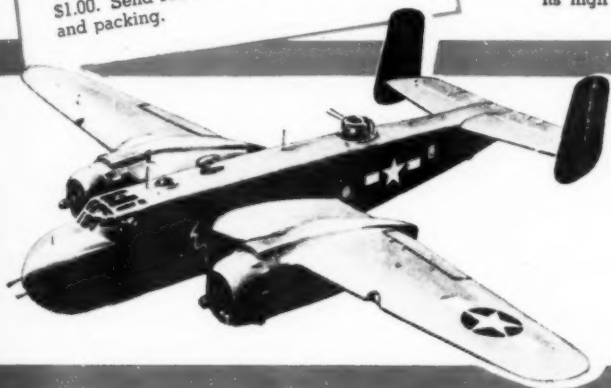
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A larger plane than our 25 inch model of Republic's powerful single-seat fighter plane. Noted for its high altitude performance and speed

40 inch wing span.  
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A brand new model of North American's famous "Tokyo Bomber" brought so forcibly into the news by Major General James Doolittle. This is the "Cannon Plane" version with the 75 mm gun in the nose. One of our finest models. 40 inch wing span. Kit \$1.50

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Thrilling new model of the Curtiss built U. S. Navy dive bomber, said to rank tops in dive bombing equipment. A model you will be proud to build and fly. 32 inch wing span.

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FORTY KITS

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Actual Photo of Curtiss Hell Diver

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parent. The nose of the plane is enclosed in transparent panels which will not freeze or cloud. The bombardier, pilot and co-pilot are all located within a single, soundproofed compartment so that normal conversation may be carried on without use of the interphone. There is no windshield or fuselage break for the pilot, the transparent nose provides adequate vision and reduces drag considerably. The pilot and co-pilot are separated by an aisle through which the bombardier passes.

The instrument panels are in direct contrast to expectations, being simple and few. The pilot has only the bare engine and flight instruments, the co-pilot position indicators and accessory controls. Behind the co-pilot's seat is the flight engineer's compartment. He faces aft to a control board upon which are mounted the instruments omitted from the pilot's panel and a few dozen more. He is in complete charge of the engines, propellers, fuel mixture, supercharger, everything that makes up the power of the plane. Opposite the flight engineer and behind the pilot is the navigator, facing forward. His compartment is complete with plotting board, map and data book compartments and necessary sighting, plotting and reference instruments. Behind the flight engineer, facing forward, is the radio operator surrounded by such a maze of radio equipment as has never been assembled in one airplane. In addition to complex and abnormally long-range transmitter and receiver sets there are many special radio sets designed for specific purposes.

This forward section of the fuselage is the control headquarters and the brains of the monster. Immediately aft are the bomb bays completely sealed off from the cabin. Above the bomb bay is a long, narrow tunnel which serves as a *crawlway* between the front and aft sections. Immediately aft of the bomb bays is the gunners' compartment. Here there are three seats, one on either side of the fuselage at the waist sighting stations, and a third chair mounted on a table. Seated at this chair, the gunner's head is thrust up into the upper sighting station and the entire upper hemisphere is clearly visible. The small bunk room has four let-down canvas beds providing rest for "off-duty" crew members. Crew comfort was a major consideration throughout the B-29 as, for instance, the use of heavy, sponge-rubber pads in the seats of each crew member.

The nose of the ship, the *crawlway* and the gunners' compartment are within the pressure chamber. The tail gunner placement is impractical to pressurize and the gunner remains within the cabin until in the active theater.

**LANDING GEAR**—Tricycle type with dual wheels and tires. The main gear is supported by a central strut with the wheels on either side. The tires are 4 ft. 8 in. in diameter, surprisingly small for a plane of its weight but made possible by the dual wheel feature. The main gear retracts forward and up into the inboard engine nacelles, the opening is sealed completely by retractable doors. The nose gear is of similar design with dual wheels and tires, the latter 3 ft. in diameter. The nose gear retracts aft and up into the fuselage, sealed by retracting doors. A small window in the pilot's floor gives him a visual indication of the gear position. A scale version of the B-29 landing gear was installed on a Douglas A-20 Havoc at Wright Field and tests proved its practicality even when one of the tire pairs blew out.

**TAIL SURFACES**—Single control surfaces are used on the B-29 and at the start of design it seemed obvious that an electric or hydraulic "boost" system would be necessary. In such a system, the pilot's movement of the cockpit controls is magnified both in distance and power by a *servo boost* mechanism. However, such designs are expensive, complicated, add additional weight and are highly vulnerable to gun fire. Boeing engineers made this system unnecessary by developing the familiar trim tab into a direct control surface, a new and highly important job for this heretofore lowly element. By constant research, wind tunnel test and development the exact ratio system was worked out so that a slight movement of the tab, involving no more energy on the part of the pilot than the controls of a much smaller plane, moves the huge control surface in a perfectly balanced manner. Control forces on the B-29 are less than on the B-17!

**POWER PLANT**—Power for the B-29 is delivered by four Wright model R-3350 double-row radial air-cooled engines which develop 2,200 horsepower each. This giant engine, 18 cylinders in all, has the same diameter, 55 inches, as the standard Wright Cyclone engine, yet develops twice the horsepower. Boeing engineers were confronted with the problem of air intake for engine cooling, for the supercharger, for the oil coolers, for the intercoolers, etc., which usually means large holes scattered over the wing leading edge. Their solution, after extensive research, was the location of all these intakes in a single large opening under the engine. It is not easy to design such an installation and the proper cooling of the power plant system was one of the major problems overcome by persistent and careful research. The problem of supercharging these engines resulted in a demand for a turbo supercharger much larger than any in quantity manufacture. In the interest of speeding production of the new bomber, two of the regular turbos were fitted to each engine, a step never before taken. How high this powerful supercharging takes the B-29 is a military secret but it is higher than any bomber has ever operated, and that means 40,000 ft. plus!

To deliver this great power to the air was the next problem and this again called for a "first" and the four Hamilton Standard full-feathering propellers 16 ft. 6 in. in diameter! Turning this giant prop slow enough to keep the tips under the speed of sound required solution. Boeing engineers developed reduction gearing which turns the props at 35/100 of the engine rpm, slower than any other airplane but delivering more thrust!

The fuel tanks are self-sealing and are carried in the wings; quantity is astounding for the B-29 has the greatest range of any airplane now in service.

**ARMAMENT**—Details concerning B-29 armament is a highly guarded secret but it may be said that it is electrically controlled through special General Electric developed remote systems. The gunner sights the guns at one station and the guns, in another station, raise, lower, turn and fire according to the gunner's manipulation. Armament is .50 caliber machine-guns and one 20 mm. cannon. The bomb load is astounding, greater than anything yet!

**EQUIPMENT**—Well, there's tons and tons of it! But the greater portion confidential. Most operating parts are electrically controlled, a total of 150 electric

(Turn to page 44)



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NO PICTURES?—In order to include more items, we don't illustrate. Most of these items are pictured elsewhere in this magazine.

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Wildcat	Zero	Thunderbolt

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### 26" Berkeley Famous Flyers—35c each

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### Scientifics—50c each

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Vultee 25"	Warhawk 25"
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### 32" Ott-O-Former—50c each

Helldiver	Airacobra	Stuka
Typhoon	Wildcat	P38
Spitfire	Vought	Flying Fort

Whirlplane 12"	40c
Banner Sportsman 30"	50c
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### 20" Speedomatics—50c each

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### H & F Victory—50c each

Vengeance 22"	P40 22"	Spitfire 26"
Corsair 22"	Thunderbolt 28"	Mustang 26"

### 30" Capitol Values—65c each

Lockheed P38	Mustang	Corsair
Wildcat	Spitfire	Curtiss P40
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Curtiss O52	P38	Helicat
	Avenger	

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### Values—\$1.00 each

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Med. 10c, Lge. 15c

Gas Model. 25c

MUSIC WIRE

.014 .25c

.020 .25c

.034 .40c

.040 .37c

1/16" .37c

3/32" .37c

1/8" .37c

1/4" .37c

1/2" .37c

3/4" .37c

1" .37c

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86 1/2" .37c

87" .37c

ington, California Institute of Technology and the National Advisory Committee for Aeronautics. Reports from all sources were enthusiastic and on August 24, 1940 Boeing received a contract to build three full size XB-29 planes.

Work started on the planes and as the first plane took shape the Army made its decision: build it, build it in quantity, build all you can, but hurry! On May 17, 1941 Boeing received a contract for the production of the XB-29 before the first plane was even near completion!

Boeing engineers subscribed to the time worn rule: "One test is worth a thousand expert opinions" and the XB-29 is possibly the "most tested" airplane ever built. Scaled down versions of the tail surfaces and ailerons were installed on a standard B-17 and tested for sensitivity, controllability, forces required and freedom from vibration. A special scaled-down version of the landing gear was fitted to a Douglas A-20 *Havoc* and tested for shimmy, shock loading, braking, directional stability and mechanical practicality.

On September 21, 1940 the first XB-29 rumbled down the runway and lifted into the air for the first time with famed Eddie Allen at the controls. After one hour and 15 min., unusually long for an experimental test flight, Allen brought the big ship in and pronounced it okay!

That first test flight set in motion one of the most amazingly thorough test schedules ever devised. For over two years the XB-29 was flown under every conceivable condition with gages, valves, lines and indicators of every description attached to the most minute part to determine its exact operation.

The power plants, with their experimental turbo superchargers, were the subject of most of the tests and the greatest possible amount of cooling from the smallest possible opening was the goal ahead during these tests. On February 18, 1943 the giant ship was aloft on such a test and an inboard engine began to heat. Growing hotter, it suddenly burst into flame, the engine nacelle became a fiery structure of twisted metal. Eddie Allen and the Boeing Flight Test Unit pointed the big ship towards Boeing Field and raced towards safety. But the flames spread through the wings, into the cockpit and choked the pilot and co-pilot in blinding smoke. Suddenly the great craft swooped low, staggered, and plunged into a fish cannery on the shores of Lake Washington, killing the entire crew.

The tragedy of Eddie Allen's death shook the aeronautical centers of the country. And the Army gravely reviewed the entire XB-29 project. The world was aflame with war, this looked like the bomber to win it, and yet all lay in a crumpled heap in Seattle. General Henry H. Arnold took personal charge of the program, dismissed the investigating officers and plunged wholeheartedly into B-29 production with a firm: "Go ahead!" It was Arnold's personal faith in this mighty airplane that saved it from oblivion.

The other two XB-29's were completed, more tests, more flights, more engineering. And more disappointments. One test flight approached its end when it was discovered that the landing gear would not come down. The resulting belly landing caused \$175,000 damage to the huge craft. Another neared failure when crossed aileron controls were discovered, after the plane was in the air! All three of the original XB-29's were washed out but 252 hours of test flights procured data far beyond the monetary value of the

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**NEW SCORE-MARKER DECALS**  
Contains over 100 different units, 1 & 2 colors. Postpaid 15c.

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THE FAMOUS

**MIKE CLASS 'A'**  
**\$1.49**

The first small ship in gas flying history. Originally \$4.95 but volume production made it possible to offer it at this exceptional price. 48" span. Perfect for either beginner or advanced flyer.

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**BALSA 5 YEAR OLD "CONTESTAR"**

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Skyscraper wings for 'A' or small 'B' engines, stream-line wheels, included.

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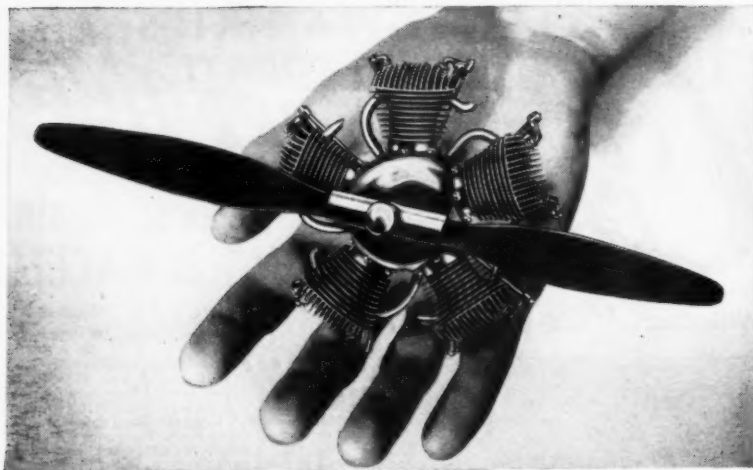
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## Build It At Home . . . From SCRAP! THE WORLD'S SMALLEST 5-CYLINDER AIRPLANE ENGINE!

$\frac{5}{16}$ " Bore and  $\frac{3}{8}$ " Stroke

You can be the proud owner of this amazing 5-cylinder, 4-stroke cycle airplane engine, built to  $\frac{1}{4}$ th scale of its big brother. Right now we are working all out for Uncle Sam but when our facilities can be released for peace time production, this engine can be purchased from us complete, factory tested, *guaranteed*, and ready to run. MEANWHILE . . . START BUILDING IT, YOURSELF. NOW. You can build this fascinating motor in your own workshop—all of it or any part—using easily procurable, non-essential metal scrap. Any parts you may not wish to make you can buy from us later, at a reasonable price.

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# FORSTER



A limited number of FORSTER engines will be available for Model Aircraft use,—Model "29" soon —Model "305" a short time later. You will get the original "FIRST-QUALITY" engines—no war model.

The making of engines must necessarily come second to our war production schedule so,—if delivery of your engine is delayed a little, please be patient.

If you have a Model "29" or "305" engine which can be put back into service by expert Craftsmen, send it to our factory for a first class overhauling. It will allow some Model builders to own a FORSTER engine who otherwise would have to do without one until after the war.

## \$18<sup>75</sup>

Complete with Aero. Featherweights, Spark Coil and Metal Covered Condenser.

## FORSTER BROTHERS

1415 Lake Street

Melrose Park, Illinois

investment.

Assured that his faith in the B-29 was justified, General Arnold placed Brigadier Kenneth B. Wolfe in charge of the program, a position he still holds, in effect, as head of the new 20th Bomber Command. A gigantic production program was established, a complete story in itself, and soon B-29's began to roll from factory doors.

Secretly, groups of the new bombers were shipped to the China-India-Burma theater by boat to avoid enemy detection and reassembled ready for action.

The B-29's went into action super-cautiously at first on preliminary reconnaissance missions. After several of these, the B-29 became unexpectedly involved in combat. On a mission over Burma, a group of B-29's was suddenly attacked by 12 Japanese Zeros. The B-29 gunners opened fire and succeeded in downing two of the Nips before they danced away but not before they had damaged the big planes slightly and wounded crewmen. Oddly enough the bombers were instantly identified as "B-29" by the Japanese, a tribute to their recognition (and espionage) system. The incident remained hushed, however and the B-29's were kept under careful wraps.

And then came June 15, 1944 and the world was electrified by the B-29 raid on Japan. For how many years had Boeing engineers waited? Well, the B-29 airplane was three years old, the design 4 years old, the idea 8 years old, the Boeing Bomber was 13 years old and Boeing airplanes were 18 years old.

The heavy damage to the Yawata steel factories is but the first sparring glove in this fight to the finish. The next blow will be a healthy cross. After that a sharp uppercut. And someday will come the haymaker on the button! On that day Boeing engineers will know that whether their wait was 3, 4, 8, 13 or 18 years, it was not in vain. And those millions who had a share, no matter how small, in the B-29 program will know, too, that victory may take time but its value is well worth waiting and fighting for.

### Production Program

Under the original B-29 production program, it was planned to have Boeing's Seattle plant build the bodies and the inner wing sections of the bomber and ship them to Wichita for assembly. Wichita, besides assembly, was to build the outer wing and tail surfaces.

The possibility that Seattle might experience an air attack and an increase in demands for Flying Fortresses caused this program to be abandoned and Wichita was made into a completely self-sufficient, integrated unit where all sections of the airplane (except those detailed to subcontractors) would be manufactured and assembled.

In February, 1942, scarcely more than a month after Pearl Harbor, the B-29 production program assumed national proportions when the War Department contracted with the Bell Aircraft Company, the Fisher Body Division of General Motors Division, and North American Aviation, Incorporated, to become partners with Boeing in the B-29 production program. The program involved the construction of a huge new plant to be operated by Bell in Marietta, Georgia, and another to be operated by Fisher at Cleveland.

Later, after the battle of Midway had demonstrated that land-based bombers could destroy an enemy task force at sea

(Turn to page 50)



# The Nation's Hobby Supply—Internationally Famous

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Scale Model Kit—1/4" to 1"

**Many Movable and Working Features**  
 • Hinged, movable outriggers • Four wheel carriage  
 towers freely • Unique steering detail • Entire gun  
 towers to four jacks • Top carriage revolves  
 360° • Gun elevates 90° • Model builders  
 opportunity for super detail.  
 Plus 25c postage

**\$2.95**

## FALCON SPEEDSTER

All Balsa

Complete kit.....**\$5.95**  
 By Mail \$6.25

## BALSA SOLIDS

All parts cut to shape—complete kits—  
 VULTURE A-31; Gruman; Avenger; Curtiss Dive  
 Bomber; Hawker Typhoon.....kit **75c**

## SPECIAL

U-REELY CONTROL.....**\$4.75**  
 TETHER KITS by Austin.....**\$1.00**

STENZEL'S INTERCEPTOR, "A" or "B" **\$2.95**

## Cleveland's "Tether Streak"



MA185—A model of the early 1914 Bell Jet - Propelled Fighter, now in combat. 1/4" scale model. As a line control job; powered with a "Hornet"; will do over 100 miles per hour; Very strong.  
 Complete kit.....**\$3.50**  
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MA186—CLEVELAND'S NEW "HELLCAT" the pitting image of the Navy's latest carrier—31 1/2" wing span. Add 25c pos. **\$3.50**

## AGAIN AVAILABLE

TESTOR'S FLYING FORTRESS

No carving—Complete Kit.....**\$1.15**  
 Dick Korda's Gold Star and Victory models; 32" wing span, each.....**50c**

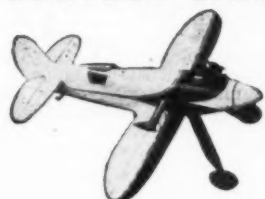
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40 to 45 inch wing span—  
 LOCKHEED P38.....**\$1.25**  
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## POPULAR GAS KITS

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 Plastico Rok, A Real Filler, tube, 30c.

## CONTROL LINE



SUPER V SHARK

New Improved Super "G" Line Model with entirely new control device. For Class "B" and "C" motors. 24" wing span, beautifully streamlined. Ruggedly built. Complete kit with instructions for flying and building.....**\$4.95**  
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LIGHTNING P-38  
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 MA125—AERO Coil, 3-yr each.....**\$2.50**  
 "Blue Flash" Coils each.....**\$1.75**

**BATTERY BOXES**  
 all metal; specify size, each.....**40c**

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**\$2.25 p.p.**

## SUPER JEEP

1" scale  
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MA127—Accurately molded plastic full-tread wheels; dash-board detail; gear shifts; springs; footrests; formed metal grab irons; gas tank; muffler; movable windshield; die-cut radiator grill; trenching shovel; decal insignias and numbers; strong and rigid X-frame chassis.  
**\$2.50** ADD 25c Postage



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 A better spark than best flashlight cells; rechargeable; one charging takes care of entire day's flying.  
 Flight Battery.....**\$2.75**  
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Thermic 18".....**\$0.20**  
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Here's an electrically heated iron, that may be used for small soldering jobs. Complete with 3 points. Should be in every modeler's kit.



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Authentic miniatures. Standard and Spinner; glossy black finish, can be painted to match any color scheme:  
**STANDARD TYPE**  

No.	Diam.	Scale	Price	No.	Diam.	Scale	Price
1	1 1/2"	1/4"	10c	10	1 1/2"	1/4"	10c
2	1 1/2"	1/4"	15c	20	1 1/2"	1/4"	15c
3	2 1/2"	1/4"	20c	30	2 1/2"	1/4"	20c

 Order by number

## FINE QUALITY MODELERS TOOLS

AMONG THE SCARCE ARTICLES, but Corr's offer a plentiful supply, but advise that you place your order immediately. Well-known standard makes—all fine quality tools at low prices.

MA174—Center Gauges, U. S. standard tempered, 60 degrees.....**.50**  
 MA175—Mounted Abrasive Wheels, on mandrel; 1" dia., ea.....**.35**  
 MA176—18-Pc. Tool Set—1 steel cutters; 6 silicon wheel points; 2 emery wheel putting discs; 3 brushes—all mandrel mounted.....**5.00**  
 MA177—12-Pc. Tool Set—larger sizes—1 steel cutter; 5 silicon wheel points; 1 polisher; 2 cutting discs; mandrel mounted.....**4.00**  
 MA178—12-Pc. Silicon Wheel Point Set—carborundum; needed shapes; mandrel mounted, set.....**3.75**  
 MA179—Small Tungsten Steel Burs, ea.....**.30**  
 MA180—Larger Tungsten Steel Burs, ea.....**.50**  
 MA181—Pocket Scribers—1/4" diameter; positive locking chuck; reversible points.....**.75**  
 MA182—5-Pc. Wood Carving Chisels, finest steel; wooden handles, set.....**3.50**  
 MA183—Wood and Metal File and Tool Handles; size #0, 15, 1, 20, 2.....**.35**  
 MA184—Circle Cutters for sheet steel, brass, aluminum, wood, plastic, hard rubber and other materials. Adjustable cross bar and cutting bit. Jr. size 1/2" to 2 1/4" dia. 1 size holes 1/2" to 4" dia.....**2.25**  
 MA125—XACTO KNIFE CHEST with handles, 12 blades and fitted wooden case.....**3.50**  
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Manufacturer's Plans  
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**RUBBER  
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**65¢**

Here's a pre-war 'friend'—in a pre-war value! A beautifully 'truest' and detailed model of present-day PIPER CUB COUPE! Easy to build from the crystal-clear, large size plans. Multi-ribbed and stressed for maximum strength. From spinner to tail, it's the real plan come to life in thrilling miniature! An excellent kit choice for your first 'post-war' model—all necessary building materials right in the kit, complete for only 65c AT YOUR DEALER.

**SAY 'CAPITOL'S NEW PIPER CLUB  
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All model plane kits now centralized in our new building-home. Entire production being rushed direct to dealers, none reserved for mail-order! For IMMEDIATE DELIVERY on any 'distinguished design' CAPITOL KIT... your regular hobby supply source.

Choice of **8** Contour Type Models, each **65¢**

PIPER CUB COUPE 30"	LIGHTNING 25"
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**CAPITOL  
MODEL AIRCRAFT**

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2413-23 Atlantic Ave., Brooklyn 33, N. Y.

## Flash News

(Continued from page 40)

NAVAL AVIATORS have shot down 5,521 Japanese airplanes in combat and destroyed at least 738 on the ground for a total bag of 6,259 since Pearl Harbor. Navy losses are 1260 planes in the air and 17 on the ground. This is a ratio of 4.8 Japanese planes destroyed for every Navy plane lost, an amazing record. The Navy announced that at least 65% of all Navy personnel shot down in combat were rescued.

A NEW technique was developed by pilots of the 14th Air Force in China. During bombings and strafings of Japanese troops and supply ships at coastal points, one Yank pilot drops his auxiliary fuel tank filled with gasoline and his wingman pumps tracer bullets into it. The flaming gasoline sprays the ships below. As many as 1,000 casualties have been inflicted on crowded Japanese troop ships in this manner.

NO SURPRISE to AAF members but possibly news to many civilians is the recent statement of Lt. Gen. Joseph T. McNarney, Deputy Chief of Staff of the Army Air Forces, that: "... not over 10 per cent of the total personnel of the Air Forces are flying personnel." With a total of 2½ million officers and enlisted men, the A.A.F. has only about 175,000 who are pilots, bombardiers, navigators, etc. It requires the remaining 90% of these men to maintain these crewmembers in the air, a clear picture of one aspect of Airpower.

REAR ADMIRAL DeWitt C. Ramsey, Chief of the Bureau of Aeronautics, in a broadcast reveals that we will have more than one hundred aircraft carriers in commission by the end of this year! Remember the six we had in service on Dec. 7th, 1941?

GENERAL DOUGLAS MacARTHUR announced the formation of the Far Eastern Air Force which combines the 5th Air Force, operating in Australia and New Guinea, and the 13th Air Force operating in the Solomons. The Far Eastern Air Force is commanded by Lt. Gen. George C. Kenney and will be used in the Philippines and East Indies "at the proper time."

THE 75,000th landing has been made on the decks of the U.S.S. *Saratoga*, our oldest but still the largest aircraft carrier. The landing was made by Lt. (jg) W. A. Johnston and O. F. Tarr, ARM2c in a Douglas SBD *Dauntless* dive-

bomber. It is of interest to recall that the first landing on the *Saratoga* was made January 11th, 1928, by Lt. Comdr. Marc A. Mitscher, now Vice Admiral Mitscher commanding Task Force 58 in the Marianas.

A ROUGH IDEA of post-war air transport may be gained from the recent flight of a Navy transport plane from Pearl Harbor to Washington, D.C. Only one stop was made, at Albuquerque, New Mexico, after a 3,295 mile flight from Honolulu! Vice Admiral John H. Towers, Deputy Commander of the Pacific Fleet, was aboard the plane taking him to Washington for an important conference. The total flight of 4,945 miles was made in 26½ hours including the 1½ hour stop-over at Albuquerque. That means a cruising speed of nearly 200 mph and a range of more than 3,000 miles!

TWO ARMY pursuit planes have been redesigned as high speed two-seat transport planes. A two-place Curtiss P-40 *Warhawk* is now in use at the Army Air Forces Tactical Air Center, Orlando, Florida, for important military personnel who need fast transportation. General Eisenhower recently toured the Normandy battleground well behind the enemy lines in a special North American P-51 *Mustang* carrying a rear seat. These are the first two single-seat fighters so equipped, the earlier Lockheed P-38 "Pick-a-back" two-seater merely being a second man who crawled up on the radio shelf behind the pilot and crouched as the hatch was closed. The *Mustang* and *Warhawk* have full, regulation seats and compartments and provide the fastest air passenger service in the entire world!

RESEARCH IN METALS hasn't been idle and at least eight aircraft factories are building certain highly stressed parts from 75S aluminum alloy developed by Aluminum Company of America. The new alloy is twice as strong in compression and stronger in tension than any other aluminum alloy now used in aircraft construction.

SKIP-BOMBING EXPERT Lt. Col. L. R. Hughes, Jr. C.O. of 14th Air Force Fighter detachment, recently sank two Jap freighters with one bomb—that didn't go off! The dud pierced both vessels, moored together, and they both rolled over and went to the bottom!

## Small Stuff

(Continued from page 21)

out to suit the engine used as this will vary. At this time the wing should be cemented to the fuselage as shown on the plan. The lower stringers are now put in place.

Install the landing gear. This will have to be bent to shape and bolted in place. The fairings can be added along with the pants and wheels. This should be done well so that they line up properly and are securely cemented.

The stabilizer is cut and sanded to the desired section, and the hinges are added. Install the bell crank and connect the push rod. Eyelets are now added to the side of the ship.

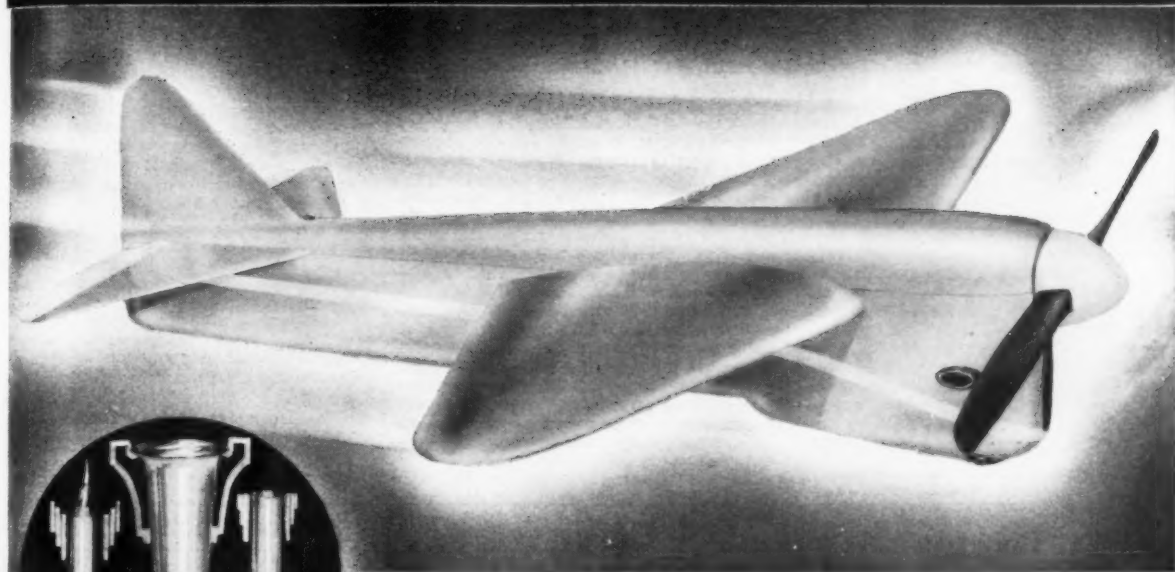
Now the plane is ready to cover and in order to get a good covering the ship should be well sanded. Use as many small pieces of covering necessary to do the job well. The fillets are now added to the

wing. These are cemented well in place as they strengthen the wing.

Add the spinner to the prop and the ship is ready to dope. This is where a few more miles per hour are added so let's do a neat job. The easiest way to do this right is to give the ship a coat of wood filler and then dope in the usual manner. However, thin out the dope and sand between each coat because in this way you add very little weight to the ship and a good dope job will result.

FLYING—This ship is no different than any other and a little patience will go a long way. Take the ship off down wind and add those rev's a little at a time until you have complete control of the ship at high speed. When stunting, which this ship does well, add another fifty feet of line and stunt in calm weather.

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(Illustration above is of a Free Flight prop—very similar to the Control Line Champion)





## Boeing B-29 Bomber

(Continued from page 46)

and the Navy changed its emphasis from seaplanes to landplanes, the Boeing Company's new plant at Renton, Washington, originally intended for production of Boeing Sea Ranger flying boats for the Navy, was added to the B-29 program in place of North American, which is no longer a participant.

Conversion of the huge Boeing Renton plant from Sea Ranger to B-29 tooling was begun immediately, and the first production bomber was completed there at the end of 1943.

Another step in the production program was the recent announcement that Boeing's Plant 2 in Seattle, where Flying Fortress production history had been made, would be converted to B-29 manufacture. When this conversion is complete, all of Boeing's plants will be devoted to the B-29, and the manufacture of the Boeing B-17 Flying Fortress will be carried on entirely by the Douglas Aircraft Company and Lockheed Aircraft Company, which have been producing the B-17's under a joint production agreement with Boeing. The Boeing Company will continue to carry the engineering

responsibility for the B-17 Fortress as well as the Superfortress.

In order that the B-29 production program would run smoothly, despite the widely separated areas in which the Boeing Bomber was to be manufactured, a B-29 Committee was set up to act as a production control unit.

The Boeing Company will continue to carry the engineering responsibility for the B17 Fortress as well as the Super Fortress.

This Committee was patterned after the Boeing-Douglas-Vega Committee, formed in 1941 to guide the cooperative production of Boeing Flying Fortresses. The plan was originally suggested by Boeing President P. G. Johnson when the Army Air Forces first decided upon the need for large numbers of Fortresses and asked the Boeing executive's ideas as to how large scale production could be obtained immediately. Like the original BDV Committee, the newer B-29 Committee is composed of a representative of each airplane firm participating in the program and a representative of the Army Air Forces. It has various subcommittees operating under it. The B-29 Committee coordinates the procurement of materials and coordinates subcontract-

ing, prepares and maintains master production schedules, coordinates tooling requirements and distributes all design change instructions among prime contractors.

In short, the Committee is the clearing house for all matters pertaining to B29 Production.

As designer and sponsor of the B-29, the Boeing Aircraft Company is charged with the responsibility of providing all engineering data to the cooperative companies, making all design changes and passing them along to the other companies, supplying master gauges that control the interchangeability of parts, and making available to the other companies its tooling information and its subcontracting and production information.

All this is supplied through the medium of the B-29 Committee, on which Boeing representative is F. B. Collins, Boeing sales manager. Other members are R. L. Bell, Glenn L. Martin Nebraska Company, A. P. Ripley, Fisher Body Division General Motors Corporation and B. A. Winter, Bell Aircraft Corporation. The Committee's offices are located in Seattle where sessions are held regularly.

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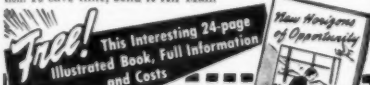
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## Air Ways

(Continued from page 17)

out in his picture, whereas a gas model usually has no details of any kind, just a fuselage, wings, etc." Perhaps you're right there but that's hardly a good excuse for letting a snapshot represent your hours of labor, flight testing, correction and adjustment and final record flight. Why not take your latest gas or rubber job to a regular commercial photographer, to a photo-fan friend of yours, or rig up a good camera with your model against a solid black or white sheet or blanket and turn out a good job? Top notch photos always find a warm reception in *Air Ways* so get a good print and send it along. (We cannot use negatives.) Show the solid fans they're not the only photographers in the crowd!

When the picture at the head of *Air Ways* this month came in and we first laid eyes on it, memories rushed like a torrent and we came to half-an-hour later still staring off into space. We think the same thing will happen to you if you've climbed only a fraction of the telephone poles, trees, thorny bushes, roof tops, church steeples and city buildings as we have in pursuit of what-was-left! (We never really minded wrecking a model; it was always a beautiful excuse to start on a new one!) The picture actually shows Joe Bligh, 134 N. Missouri Ave., Atlantic City, N.J., retrieving his *Flagship* gassie.

Picture No. 1 comes from W. A. Gibson, 636 No. 4th St., Saint Petersburg, Florida, and shows his *Vought Corsair* model. He refers to it as the F4U-2 but we have no knowledge of a "2" in actual service and Mr. Gibson's model is, undoubtedly the renowned F4U-1 model. At any rate it is a good job and he says: "The span is 8" and the scale is 3/16" to 1". All of my models are built to this scale because I think it is just right, 1/4" is just too big (I dislike big solids) and 1/32 is too small. The model and pedestal are of sugar pine with lacquer finish and car polish. Working time was about 50 hours including scaling up the plans." The use of an artistic stand enhances the appearance of a model used for display, no doubt of that.

Jack Pitt of 915 Charleton Road, Westfield, New Jersey, sends in Picture No. 2 of what we believe is one of the very first 4-blade control liners. Jack explains: "My *Fireball* was originally powered by an Ohlson '60' turning a 14" prop. This necessitated lengthening the landing gear. The test flights, however, proved the landing gear was too springy. On the last of the test flights the elevator went haywire and the model went into a wild, zooming flight with stalls and climbs. Finally the engine cut right after the plane had pulled out of a steep dive and she stalled in. I took the plane into my workshop and decided to install the regular *Fireball* landing gear. However, for this I had to use a 12" prop which didn't work out so well. So I decided to design a four-blade prop which would keep the engine rpm about normal but give me plenty of thrust. The enclosed picture shows the result."

Jack says he has never clocked his model nor entered it in a contest since there are no U-control contests in his vicinity. "But it's plenty fast!" he adds.

Picture No. 3 comes from a renowned British model builder, Lt. Col. C. E. Bowden, Bush Steep, Porlock, Somerset, England. He will be remembered by some of the old-timers as the first modeler in England to set a gas model book

## GAS PROPS

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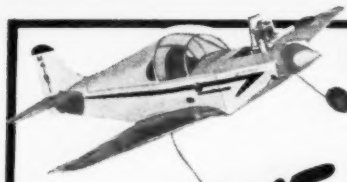
36" long	2"	3"	36" long	
1/32	.06	.10	3/32x3/16	2 for .03
1/16	.06	.10	3/32x1/4	ea. .02
1/8	.07	.11	3/32x5/16	ea. .02
3/32	.08	.12	3/32x3/8	2 for .05
1/4	.09	.13	3/32x7/8	2 for .05
5/32	.10	.15	3/32x1/2	ea. .03
3/16	.11	.16	1/8 sq.	6 for .08
7/32	.12	.18	1/8x3/16	3 for .05
1/2	.15	.21	1/8x1/4	2 for .05
5/16	.17	.23	1/8x5/16	2 for .05
3/8	.20	.26	1/8x3/8	ea. .03
7/16	.22	.29	1/8x7/16	ea. .03
1/2	.24	.33	1/8x1/2	ea. .04
	.26	.36	3/16 sq.	4 for .10
			3/16x1/4	4 for .10
1/16 sq.	dox.	.10	3/16x5/16	4 for .10
1/16x3/32	ea. .01		3/16x3/8	4 for .10
1/16x1/8	6 for .08		3/16x7/16	ea. .03
1/16x3/16	3 for .05		3/16x1/2	ea. .03
1/16x1/4	ea. .02		1/4 sq.	ea. .03
1/16x5/16	2 for .05		1/4x5/16	ea. .03
1/16x3/8	2 for .05		1/4x3/8	ea. .04
1/16x1/2	ea. .03		1/4x1/2	ea. .05
3/32x1/8	2 for .07		3/8 sq.	ea. .05
	6 for .08		3/8x1/2	ea. .04
	2 for .03		1/2 sq.	ea. .06

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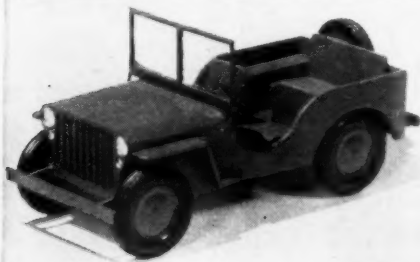
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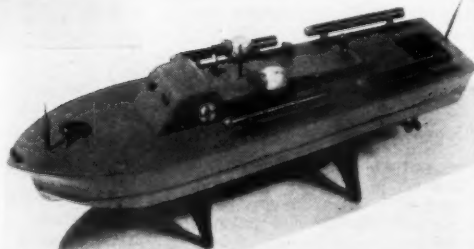
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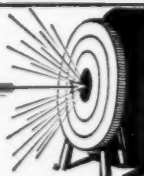
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St. Louis 4, Mo.



in his spare time (the war practically eliminates it altogether) he sends us a photo of his latest model, a smooth low-wing job. The fuselage is balsa planked and it is powered by a Brown engine. The wing is split in the center and the two panels held together by short dowels and wire hooks to which the rubber bands are attached. This assembly is secured to the fuselage platform by double elastic bands attached to hooks fore and aft. The tail surfaces, as well as the engine mount, is detachable. Colonel Bowden gives no details concerning the performance of his model but it is of interest insofar as the low-wing design has disappeared from free flight contests.

Mr. N. A. Schaer sends in Picture No. 4 of his original design Curtiss P-40 "Flying Tiger." He says: "The model is semi-scale, has a 32" wing span and weighs 1 7/8 pounds. It is constructed of balsa and bass. The fuselage is made from two solid pieces of basswood hollowed out and the wing is of balsa and bass structure with paper covering. The motor is an Ohlson '23' and is painted light cream, trimmed in red. This garish color scheme was chosen deliberately as I wanted to take motion pictures of it. I have already made a 50 ft. movie and intend making more."

Mr. Schaer says he had a little trouble getting the model to balance and fly properly and would like to see more information on the tricks of control liners. That old U-control demon Frank Ehling (see page 21) is putting the finishing touches on a control line piece that should answer many questions about these tricky speedsters and you'll see it in MODEL AIRPLANE NEWS very soon.

It is always a pleasure to hear from Allan Kitchel, the master miniature modeler and his latest efforts prove no exception. Picture No. 5 gives you an idea of what can be done in the way of model displays. Allan is actually Lieut. Kitchel, stationed at Naval Air Station Jacksonville, Florida, and the group of models reposes in the O.O.D.'s office. Believe it or not, all of these models are of Navy planes, which should stump some of you recognition experts. To dispel any arguments, the models are, from left to right: North American PBJ-1, Vought OS2U-1, Martin JM-1, Vought F4U-1, Grumman TBF-1, Grumman F6F-3 and below the platforms is a Consolidated PB4Y-5 and a Consolidated PB4Y-1. We will admit that some of these planes are merely Navy adaptations of the standard Mitchell, Marauder and Liberator bombers used by the Army but technically they are known by the designations given above.

Allan says: "Span of the largest of these models (PB4Y) is only 5 inches and this one took about 20 hours to build. It is carved from balsa and has about 10 coats of dope on it. The wheels are balsa, too. The struts of the models are made from paper clips and pins and the wheel housings cut from sheet celluloid."

Picture No. 6 is the work of W. A. Grant of Box 168, Camden, South Carolina. It shows his original design U-control and of it he writes: "This ship is powered by a Bunch Gwinn Aero and has been clocked at 80 mph. The fuselage is white pine and the wings are made of white pine spars and balsa ribs. Its flying characteristics are excellent."

Gene Hofmann sends in Picture No. 7 of his Vought Corsair F4U-1 and says: "It took me two months to complete this model. I used a novel idea of my own and came up with good results on the wing folding details."

(Turn to page 54)



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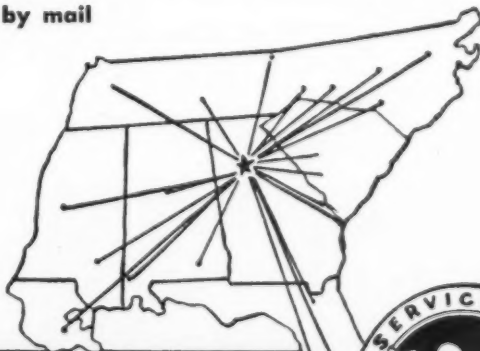
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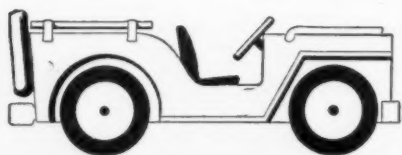
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(Inquiries invited from the trade)

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Gene, who lives at 332 Clymer Avenue, Marresville, Penn., says: "The model cost me one five dollar bill including everything." And he adds: "Credit for the excellent photography goes to Staff Sergeant Frank May." Congratulations to you both.

We nearly fell off our chair when Picture No. 8 fell out on our desk. We were beginning to worry about running out of fine words in describing a particularly excellent solid scale job when John Weisner, 496 Mount Vernon Drive, Etna, Pennsylvania, clinched it for us and left us speechless. He says: "This Spad XIII took me 3-1/2 years to build because I didn't have a lot of time and it was difficult getting information on the details and coloring. It started as a commercial kit but I continued to pick up details from photographs and data and this is the result." For other detail builders who might be looking for the correct dope, he says: "The model has a 19" span and is 15-5/8" long. It is fully camouflaged with yellow-green, dark-green and cream under the wings and fuselage. It has yellow struts, golden exhausts, metal-colored machine guns, music wire control and brace wires. The cockpit is completely detailed." Well, this one forces us to use our last remaining praise, it is absolutely *sans peur et sans reproche*.

We had an interesting visit from Edward Soltis of 57 Morningside Avenue, Yonkers, New York, who brought in pictures shown in No. 9. On the left is a Grumman Avenger TBF and on the right a Curtiss Helldiver SB2C. Edward "manufactures" these models for the parent companies and has a large assembly line of models of these two famous ships. The models are amazingly detailed and as accurate as official drawings and data could make them. Note particularly the propeller and ignition harness on the Avenger. That's real detail modeling!

Joseph P. Kochis, 222 16th St. N.W., Barberton, Ohio, is a combination modeler and photo fan, one that's hard to beat. He sends in Picture No. 10 of his scale Hawker Hurricane. He writes: "The model is built to a scale of 3/4" to 1' and is made from a kit. Although the model is painted cocoa brown and olive green on the upper surfaces the photo does not show it. I took this picture myself and developed and printed it. It was taken on Verichrome film and I found out that this film does not record the two colors in different shades of gray as does panchromatic film. The model has a carved pilot and a planked fuselage from cockpit to nose as on the real ship. The rest of it is paper covered."

## CLUB NEWS

### Mexico

We receive news of the celebration by the Club Aereo Toluca of their Second Anniversary. The club officers are very anxious to get in touch with modelers everywhere and they welcome correspondence on aeromodeling matters. They are particularly anxious to hear from Mexican modelers in the general region of Toluca as they would like to get enough modelers together to have regular meets. Anyone desiring to drop a line to Javier Guerra, Jr., Club President, may reach him at Club Aereo Toluca, Fraternidad Num. 38, Toluca, Mexico.

### Vermont

The W.T.A.M. Model Association, 99 Merrill Street, Springfield, Vermont, would like to hear from modelers and other clubs in that vicinity. Bud Brad-

(Turn to page 56)



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Learn Pursuit Flying with  
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IT'S A THRILL OF A LIFETIME.  
Motorline ship on beautiful flights, turn or fly. Loops,  
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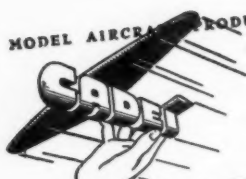
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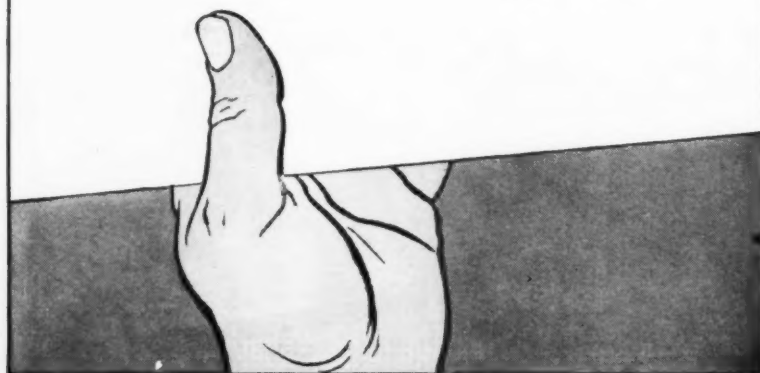
Again and to all

Cheerio . . .

CADET AERONAUTICS, INC.

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*E.B. Miller*



way of the club explains: "W.T.A.M. means We Tackle Any Model!"

### Florida

The Daytona Beach Exchange Club sponsored meet showed some good performances with William T. Thomas, Jr., winning the Eddie Rickenbacker Trophy for Class "C" gas jobs. Lt. Michael Smith, A.A.F. fighter pilot, took top honors in the Class "A" and Class "B" gas events. The ratio system was used in which the total time is divided by the engine run time and that figure set down as the official mark. Thomas' mark was 6.12 with an engine run of 15 seconds. No flight time of more than 10 minutes was credited. The meet was not AMA sponsored through a bit of strange luck: at the time arrangements were being made only a tiny field was planned which meant hand launching of everything. At the last minute Captain Willis E. Cleaves invited the modelers to hold the contest on spacious Naval Air Station, Tomoka River, but it was too late to obtain sanctions.

### Missouri

The Second Annual Midwest Model Airplane Contest was held at St. Joseph, Missouri, and rain took most of the prizes. Bob Steinacker captured first in Class "A" gas, C. O. Wright, Class "B" and "C." The rubber event was won by Ray Berens with a 2' 42.5" performance. Feature of the contest was the appearance of Air Scout Squadron No. 1 of Webster Groves, Mo., all in uniform. A rocket propelled model was flown successfully on the day preceding the contest but cracked up the following morning and could not be exhibited. First Place winners received \$25 War Bonds with kits, medals and supplies going to other winners.

### New Jersey

The first National Championships meet of the American Society of Model Aero Engineers will be held at Bendix, New Jersey, on September 17th and an enormous amount of trophies, prizes and awards will be presented. The A.S.M.A.E. headquarters is at 178 Main Street, Ridgefield Park, New Jersey, and full details of the contest may be had from E. P. Schlosser.

### Illinois

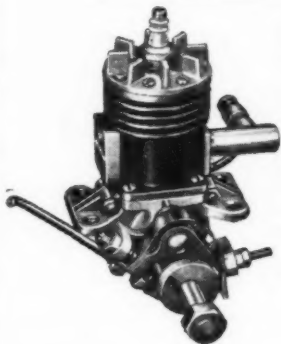
The Sky Wolves of Des Plaines, Illinois, recently held their Des Plaines Valley U-Control Championship Meet which was delayed one week by weather. Although more than 90 entries were on hand (a possible 368 official flights to be exact) only 63 were actually completed due to a more-than-average run of motor trouble. The winners follow:

- Class "A" speed  
1st. Pete Peters, Ohlson-Fireball, 45.50 mph  
2nd. Conway Corfield, Ohlson-Fireball, 44.00 mph  
3rd. Paul James, Ohlson-Fireball, 41.75 mph
- Class "B" Speed  
1st. Pete Peters, Forster-Stingray, 61.50 mph  
2nd. Bill Warner, Forster-Fireball, 49.25 mph  
3rd. Bill Warner, Forster-Wildcat, 48.00 mph
- Class "C" Speed  
1st. Wilfred Orr, Hornet-original, 81.50 mph  
2nd. Bill Warner, Ohlson-original, 71.25 mph

(Turn to page 58)

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This unit is really complete. Not only includes full instructions, coil, condenser and Champion Spark Plug (which are standard equipment with this engine for \$9.95) but includes 15 accessories as well . . . such as propeller, flywheel, fuel, battery box, coil-holder, switch, etc. These accessories are necessary to the operation of the engine and many of them will not be available later.

## THE IDEAL ENGINE FOR ALL MODELS

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4 Port 2 Stroke Cycle— 300-7,000 R.P.M.—  
 3/4" Stroke Bearing Surface, 1 1/4" Long—  
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 Motor Weight, 10 oz.—Rotation, Either Direction  
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 Height, 4 1/2"—Width, 2 1/2"—H. P. Approx. 1/5th  
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Imagine operating your own G.H.Q. 1/5 Horse Power gasoline engine—small enough to fit in the palm of your hand—yet turning up over 7000 revolutions per minute and powerful enough to fly model airplanes of from 4 to 10 foot wingspan.

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**READ WHAT G.H.Q.  
ENGINE OWNERS  
SAY** (among letters  
received this year)

**R. D., COTATI, CAL:**  
About one year ago I purchased one of your G.H.Q. Motors. I am glad to tell you that the G.H.Q. Motor is a very fine motor. I have been using it in a Super G Shark. In the past year we have been having many model airplane contests and I have won nearly every one with my Super G Shark powered by your G.H.Q. motor. My G.H.Q. motor has been giving me excellent service.

**J. N., BRECKENRIDGE, MINN.:** Am having good results from my motor.

**E. D., PLEASANT HILL, MO.:** Received my G.H.Q. motor in fine shape. Very well satisfied, and think it is a swell little motor, runs fine. A friend of mine wants one too, so wanted me to order it for him.

**G. C., SOUTH HILL, VA.:** I bought a G.H.Q. engine from you last September and installed it in a six foot wingspan airplane. In engine performance, the engine you sold me passed with flying colors. I congratulate you on putting so much performance in my engine at so low a cost.

**G. F., PITTSBURGH, PA.:**  
My G.H.Q. engine has  
given very satisfactory  
service for several years  
now.

**E. S. J., TALLAHASSEE, FLA.:** I have a G.H.Q. engine that I purchased from your company a short while ago and it operates satisfactorily.

N. L. B., N. Y. C.: I received my G.H.Q. motor in fine shape. It runs swell, and I am sending another order to you.

**M. B. H., OMAHA, NEB.:**  
I think the G.H.Q. motor  
is the best motor I have  
ever seen.

**A.Z., TEXARKANA, TEX.:** I have had about seven of your motors in the past and think quite a lot about them.

**B. D. J., SAN FRANCISCO, CAL.:** I already own one of your G.H.Q. engines and it performs like new.

**R. D., GLEN ALLEN, VA.:** I started it with only a few turns of the propeller and was very pleased with it.

**J. M., ARLINGTON, VA.:**  
I've had one of your motors for about three years now and it's still going strong.

**C. C. N., AMARILLO, TEX.:** Before my induction into the Army I built a few models which incorporated your G.H.Q. motor. I found it satisfactory and put a great deal of faith into it because of its dependability.

**D. B. R. JR., LITCHFIELD, CONN.:** I purchased one of your engines a few years ago and it is still in working order. I have used it in boat motors with great success. I am particularly impressed by its easy-starting qualities. These are very valuable in a boat, where it is more difficult to start an engine. Usually, only one attempt is needed, once the engine has been primed. As a matter of fact, my C. H. Q. motor has been easier to start when I bought it. The motor has satisfied me very much.

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3. Easy starting.
2. Steady running—as long as gas, oil and spark are supplied.
3. Motor starts and runs on two flashlight cells.
4. Motor cannot overheat.
5. Piston and cylinder features: piston constructed of one piece, with uniflow baffles and high compression head, centerless ground to within .0002". Cylinder is selected grey iron for long life, Hutto-honed to within .0001" of absolute roundness. Piston and Cylinder are hand fitted to insure perfect compression.
6. Accurate long wear aluminum die castings for cylinder head, crankcase, etc.
7. One-piece drop-forged chrome-nickel steel shaft, perfectly balanced and centerless ground. Absolutely unbreakable.
8. Main bearing (1¼ inches long) is reamed and lapped to perfect fit.
9. Connecting rod of high-speed bronze.
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11. Timer assembly compact, fool-proof, long-wearing, replaceable and adjustable. Genuine tungsten points. Not a cheap "wipe" timer but a real aviation type "make and break" system.
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3rd. James Bliss, Super Cyc-M&G Sp.,  
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New York

Robert J. Wissig, Director of the Consolidated Club, 144-19 97th Avenue, Jamaica 4, New York, wishes those interested in joining to drop him a line. The club is divided into two divisions: the Diplomat Club and the Gladiator Club to provide interest for different types of modelers.

The Prop Spinners Fifth Annual Gas Model Contest came at the tail end of a tornado which may or may not have brought in the 7 out-of-state entrants. Class "A" First went to Bryton Barron flying his Mercury "19" with a time of 430.8" total. Lieut. Leon Shulman, who flies Martin Marauders these days, came down on leave and managed to place about 10th in Class "A." He should never have stopped building Zombies! Class "B" top rating went to Cpl. Jerry Stoloff with a total time of 360.6 seconds flying his original (and how!) Yehoodi. Bryton Barron copped the Class "C" event with a 360.6 second total to sweep point honors. In the U-control event, Ken Stone, of Stratford, Conn., did 86 mph with a Cyclone-original to win that contest. Incidentally, 9-year-old Roger Barron won second place with a 48 mph performance!

Dick Baxter, President of the Syracuse Model Airplane Club established a National Record for towline gliders, Class E, Seniors, with a time of 8' 50" out-of-sight.

Canada

Ron Way of Harrisdale Model Aircraft Club is interested in hearing from modelers everywhere and particularly prospective members in the Vancouver region. He may be reached at 6390 Cypress Street, Vancouver, B.C., Canada.

VICTORY

## SKY SAILING

by **RUSSELL J. ROBINSON**

SEVEN million dollars a year! That much and more, is spent by American youth for model airplanes and necessary accessories!

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Perhaps you have despaired of really getting into the air because of a lack of education or the inability to meet some minor physical requirement. If so, cheer up! All hope may not yet be gone! Yes, there is an opportunity for you and thousands of others like you, to have the greatest thrills of your lives, in the air!

The success, in 1903, of the Wright Brothers' early airplane, caused men to entirely abandon one of the most interesting phases of Aviation. Claimed by many to produce better power-plane pilots, as well as being a most healthful sport, this was the art of gliding and soaring!

Before their success with the power-plane, the Wrights had experimented with gliders. So had Otto Lilienthal, Berin engineer. So had Chanute and many others. All the early attempts to fly were really attempts to glide through the air, for man had no satisfactory mechanical means of propulsion! When he attempted to stay aloft by movements of his arms and legs, in imitation of the flight of birds, he was foredoomed to  
(Turn to page 60)



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Precision scale model Curtiss P-40 Warhawk. Ready to hook up and fly. No carving, no painting, no building. You can assemble and start flying it in five minutes. Flies at tremendous speeds. Dives, climbs, banks, turns, does wing-overs and other stunts. Flight instructions included. **\$1.75**

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Sears for  
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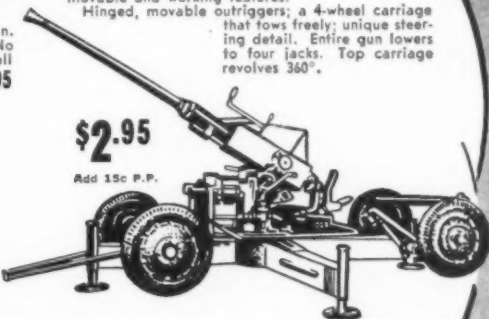
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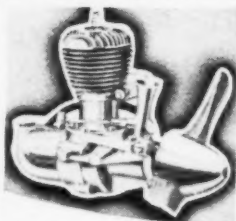


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announces the purchase of the entire stock of P-30 parts from Wetzel Motors of Los Angeles. Parts and repair service will be continued by Hobbycrafts on the same basis as formerly handled by Wetzel Motors. Minimum inspection charge. \$2.00, plus parts.

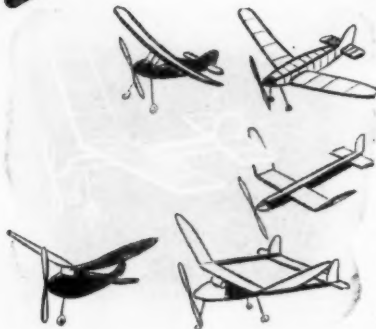
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These 3 Supreme solids have all parts cut to shape including wings, tail, etc. Fuselage profiled to shape, only a little finishing and assembling needed.

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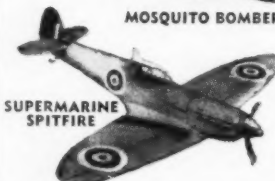
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failure, since he did not fully understand the science of aerodynamics!

The early experimenters, however, did have varying degrees of success. Consciously, or sub-consciously, each added something to our knowledge of the upper elements.

Gliding and soaring in motorless planes is truly as close as man can approach the flight of the birds. There is an unforgettable thrill to the sound of the wind as it caresses the wings of a glider. Learning to glide is easy and very much safer than learning to fly a powered plane!

Of course, all civilian flying is banned for the duration of the war. However, at its close gliding enthusiasts will most certainly avail themselves of the opportunity to again indulge in their favorite sport. Also, if one may credit the predictions of various persons in the field of aviation, there will be opportunity after the war, for glider pilots on a commercial basis.

The glider pilot may soar through the air at speeds as high as fifty to seventy miles per hour. This in some instances is the landing speed of powered craft. Gliders, on the other hand, may be set down at speeds ranging from twenty to forty miles an hour! Light in weight as they are, and extremely sensitive to controls, the glider may be landed almost anywhere without damage to itself or injury to its passengers!

But perhaps you are wondering just how you may join in this fascinating activity. There are of course, certain rules and regulations governing gliding. These are not too hard to meet. There are gliding and soaring clubs in various parts of the country, where you may learn the technique. The elementary

knowledge necessary to gliding can be mastered within a short time.

Each year, at Elmira, New York, is held an annual contest. In 1941, second place in this competition was won by a fifteen year old school boy! This lad's father diverted his attention from cycling to gliding because he considered the latter sport safer!

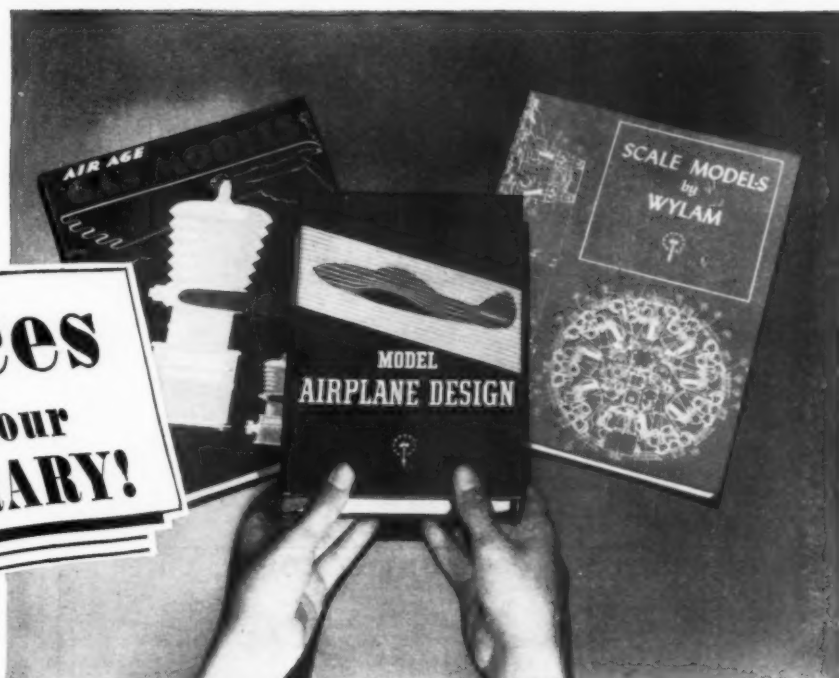
There are two types of gliders. These are the utility, which is used for training of beginners in the sport and the sailplane. The utility is fast losing favor, being replaced by the sailplane for both instruction and for use by experienced fliers. Both types are of monoplane design, with about the same number of controls and instruments as you might find in a modern powered-plane of light-weight construction. The sailplane may be a one or two-place craft. Sleekly streamlined, it is very often mistaken for a powered plane when observed from a distance.

The glider cockpit is usually enclosed. Herein you will find the usual "stick" or wheel by which the elevator and ailerons are operated. There are also pedals for foot operation of the rudder. Most essential of the instruments are the speed indicator, altimeter and a variometer. The last named indicates the rate of climb or "sink" in feet per second.

There are two methods of instruction in the art of gliding. One employs a motor car to be used as a ground tow. Seated in the cockpit, with the glider facing into the wind, the student is taught operation and co-ordination of the controls before he actually leaves the ground! Delicately balanced as it is, the glider craft does not require a very strong breeze to lift it

(Turn to page 62)

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tail and stand upon the solitary landing wheel.

The craft is then towed down the field by means of a rope fastened to the rear of the tow car. The opposite end is attached to the nose of the glider. When going into the air, this rope is cast off by means of a lever within the glider cockpit. Instructions to the student are given by means of hand signals.

As the student gains knowledge and becomes more proficient, the speed of the tows is increased until finally the student is ready to do a bit of "hedgehopping." That is, he causes the craft to rise about one or two feet into the air, then gently sets it down again. This is increased, until at ten feet altitude, the tow rope is released and the student makes short straight "flights." Next, at altitudes of fifty feet or so, the novice pilot is instructed in the making of simple maneuvers, such as the various turns, etc.

In the second method of instruction two-place sailplanes are used. A qualified instructor goes aloft with the student and carefully guides him through every move. Since there is no motor, it is possible to carry on conversation in a normal tone without difficulty. Usually, about ten hours of instruction prepare a student for the finer art of "soaring." In this phase of gliding the pupil learns to take advantage of the various air currents found aloft.

The term "air commerce" as defined by the Civil Air Administration regulations, excludes gliding to a great extent. Still, under the Civil Aeronautics Act of 1938 and amendments, gliders and gliding are subject to many of the regulations which govern powered flying.

Glider pilots, like those who engage in power flight, must be licensed. There are various requirements to be met before a license may be obtained. For the student pilot license the first requirement is that of age. If under twenty-one, you would have to submit written proof of consent of either parent, or of legal guardian.

Good moral character is also essential. You may be of any nationality. The fact that you are not a citizen will not prevent you from obtaining a license. Should you be unable to speak or understand the English language, the license may still be issued you. There will, however, be certain restrictions imposed. You must not have any physical defect which might interfere with safe operation of the motor-less craft.

There are no special requirements pertaining to aeronautical skill, knowledge or experience for the Student Pilot Certificate. In order to qualify you must successfully complete at least two flights, each of not less than one minute duration.

The following requirements must be met if you wish to obtain a Private Pilot Certificate. Age, character, citizenship and physical requirements are similar to those needed for the Student license. As an applicant for this type of license, you would be required to speak, read and understand the English language. A lone exception to this requisite is made in the case of Puerto Ricans. Some restrictions are applied, however. Further, you would be expected to be familiar with the subject of "contact flights," and to complete satisfactorily a written examination on this theme. Should you already hold a currently valid license of Private Pilot grade or higher, this requirement would be waived.

The National Aeronautics Association issues licenses for glider operation. This is done through the Soaring Society of



America. In order to "rate" the Private Pilot license, you must have completed at least one hundred gliding flights. Under certain conditions these essentials are modified. A demonstration of specific skill is also necessary.

If you are a holder of a glider certificate, Private grade or higher, the Administrator will accept as evidence of your skill and experience, a statement from a commercial pilot attesting to your capabilities.

In order to obtain a Commercial Pilot Certificate you must be at least eighteen years of age. In addition to meeting the provisions for a Private Pilot license, you would also have to take a written examination on those subjects of which certain knowledge is considered essential. If you are already possessor of a currently effective license of Private grade or higher, the written examination may be dispensed with.

A further requisite states that you must have completed two hundred fifty gliding flights, or, as an alternative, two hundred gliding flights, plus five hours of soaring, with certain other specific maneuvers.

Before the Civil Aeronautics Administration would grant you a Commercial Pilot license, you would have to demonstrate your skill in handling a glider. The Administration requires that you make one flight which incorporates a 180 degree turn and a downwind landing. Another flight, with a 360 degree turn, and the ability to land your ship within one hundred feet of a designated location. Several other flights, incorporating definite maneuvers, are also required.

The National Aeronautics Association awards "A," "B" and "C" licenses to those glider pilots who have proven themselves worthy.

Qualifying flights must be made in view of an official glider observer. The licenses in themselves, confer no official standing, they merely attest to the greater ability of the holder.

In order to obtain the "A" license, you must successfully perform two gliding flights of at least one minute duration. This must include an "S" turn and a normal landing.

The "B" license is obtained through performance of two gliding flights with 360 degree turns; one to the right and the other to the left. In landing, the stop must be made within one hundred feet of a predetermined mark.

If you wished to obtain the "C" license you would have to execute one soaring flight in which it would be necessary for you to maintain for at least five minutes, an altitude greater than that at the starting or releasing point.

There are two additional awards made. These are the "Silver C" and "Golden C" license pins. For the former you must cover a distance of not less than thirty-two miles at an altitude of 3,280 feet above that at the point at which the glider was released. You must stay aloft at least five hours.

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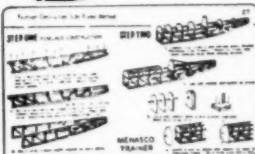
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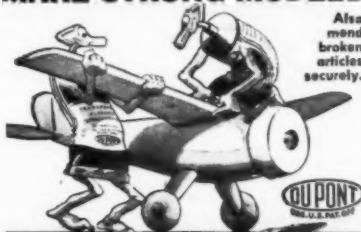
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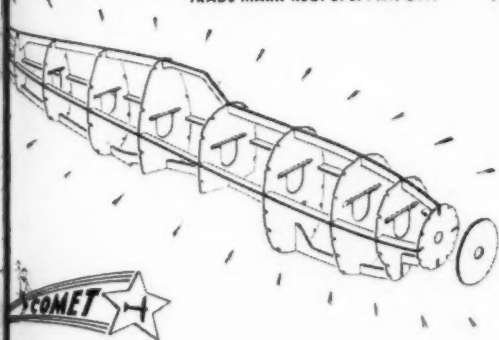
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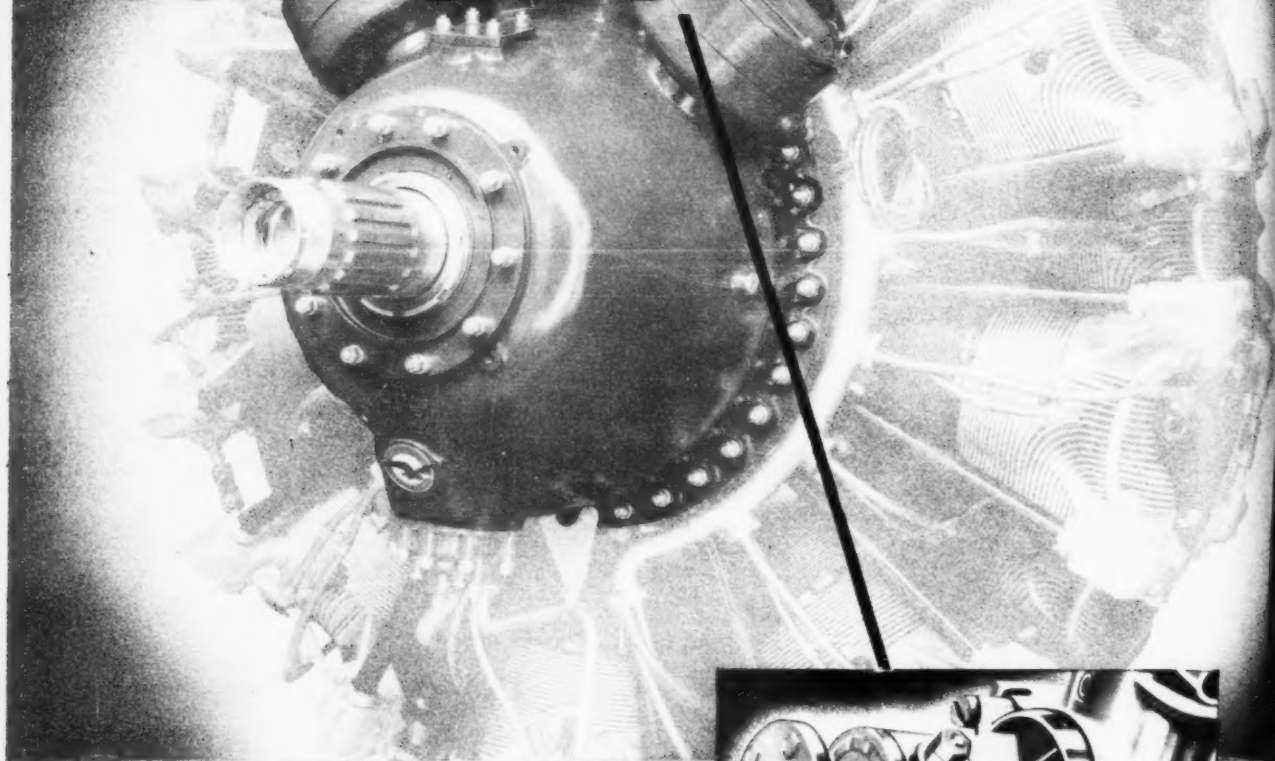
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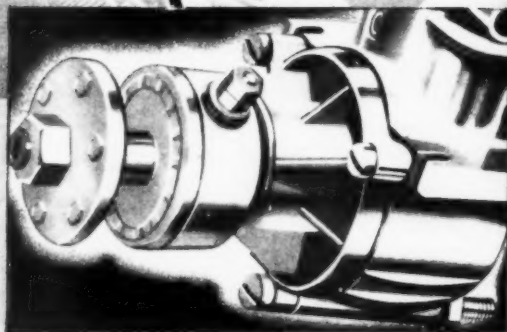
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